9

BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

Spring Meeting Record Concluded

Industrial Employment Code Discussion

Industrial and Plant Planning

Time Study

LIBRARY OF CONGRESS
NOV 12 1931

Engineering Societies Building
29 W. Thirty-Ninth St.
New York

OCTOBER, 1931

VOL. XVI, NO. 5

Objects of the Taylor Society Incorporated

The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure—for the common benefit of the community, the worker, the manager and the employer—understanding and intelligent direction of the principles of administration and management which govern organized effort for accomplishing industrial and other social purposes.

2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptations and application under varying and changing conditions.

4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, the worker, the manager and the employer.

5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective responsibility.

Membership

The membership of the Society comprises Members, Junior Members, Honorary Members, Life Members, Firm Members, Contributing Members and Student Associates. Application for membership should be made on a regular form which may be secured from the Society. New members may be elected directly to the grades marked*.

1. **Member*: An individual interested in the development of the science and the art of management as engineer, executive, operative, scientist, investigator or teacher. Minimum age 28. Initiation Fee, $15. Annual dues including subscription to the Bulletin, $20.

2. **Junior Member*: A younger member. A Junior Member may become a Member without payment of additional initiation fee at 28 years of age and must change to Member at 30 years. Initiation Fee, $5. Annual dues including subscription to the Bulletin, $10.

   For any of the above grades a person engaged in educational work, state service, government service or the service of any other non-commercial enterprise of an eleemosynary nature shall pay one-half the initiation fee and one-half the annual dues of the grade to which elected.

3. *Honorary Member*: A member elected by the Board of Directors for exceptionally distinguished service in the advancement of the science and the art of management.

4. **Life Member*: Any Member who has prepaid all dues by the payment of $500.

5. **Firm Member*: A firm or organization interested in the advancement of the science and the art of management which desires to make the service of the Society available to members of its organization. A firm member designates two representatives (who may be changed from time to time at the organization's discretion) who have all the rights and privileges of membership except the right to vote and to hold office. Annual dues, including two subscriptions to the Bulletin, $40.

6. **Contributing Member*: Any individual, firm or organization desiring to promote the work of the Society by an annual contribution of $100 or more. A contributing member has all the privileges of personal or firm membership, as the case may be, including one subscription to the Bulletin for each $20 contributed.

7. **Student Associate*: A regularly enrolled student of management in any school of engineering, business administration, commerce or arts, of collegiate rank, or a graduate of such institution who has applied for membership not later than one year after graduation, elected upon recommendation of the instructor in charge of management courses. A Student Associate may become a Junior Member, without payment of initiation fee, any time after graduation and must become a Junior Member at the age of 25. Annual dues including subscription to the Bulletin, $3.

All dues are payable in advance, either annually or in semi-annual instalments. The fiscal year is November 1 to October 31. Members elected other than at the beginning of the fiscal year are charged pro rata (quarterly) for the first year.

NOV -2 1931
©Cl B 132731

BULLETIN OF THE
TAYLOR SOCIETY
AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

Published by the Taylor Society Incorporated at
Engineering Societies Building
29 West Thirty-Ninth St., New York
Cable address: Taysoc

The BULLETIN OF THE TAYLOR SOCIETY is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.
The reprint of extracts up to 50 per cent of the whole of any article herein is authorized, provided the source is mentioned. In return the Society appreciates complimentary copies of the publications containing such reprints. Permission to reprint more than 50 per cent must be arranged through the office of the Society.
Copyrighted 1931, by the Taylor Society Incorporated.
Published every other month. Per year to Members $2.50; to others $3.00. This issue $.75.
Entered as second-class matter, Dec. 17, 1921, at the Post Office at New York, N. Y. under the Act of March 3, 1879.

Vol. XVI OCTOBER, 1931 No. 5

Contents

Comment 177
Industrial Employment Code . . . 178
Discussion by Morris Llewellyn Cooke, J. O. Hopwood, R. W. Johnson, John W. Edelman, James T. Young, Henry Tatnall Brown, Mary van Kleeck, Earl S. Sparks, Gladys L. Palmer, Mildred Fairchild, Ordway Tead, Alice Cheyney, H. V. R. Scheel
Planning in a Particular Industry . . 194
By Walker D. Hines
A Tabular Presentation of the Principles, Technique and Chronological Development of Scientific Management 197
By H. S. Person
Production Planning 200
By Ralph E. Flanders
A Case of Production Planning in a Medium-Sized Organization . . . 205
By Milton C. Herrmann
Joint Discussion by B. A. Beavan, C. C. Balderston, Allan H. Mogensen, B. Eugenia Lies, Ralph E. Flanders, Milton C. Herrmann
The Motion-Picture Camera and Clock 209
By Joseph A. Piacitelli
Time Study Chart 210
By E. K. Sterne
Notes and News of the Sections . . 211
Reviews 211
Books Received 216

Comment

WE ARE happy to report the return of Dr. and Mrs. Person from their European trip, although too recently for inclusion in this issue of the Bulletin of an account of their experiences and observations. This is promised for another issue. They request us, however, immediately to inform our American members that everywhere they were recipients of most cordial and generous hospitality on the part of European members and friends, and that the trip, although arduous, was throughout informing, stimulating and enjoyable.

DURING the past ten years the office of the Society has received many European members and friends who have come to the United States to study American methods of management. Invariably these studies have been promoted by introductions to American members who have received these visitors generously and afforded opportunities for observations and even intensive investigations. Dr. Person reports that these courtesies are sincerely appreciated by these European guests, and that the exceptionally cordial and generous reception which has been their privilege this summer is in large part an expression of goodwill to the entire American membership of the Society.

THE PAPER which Dr. Person presented at the Amsterdam Congress on Social Economic Planning, under the auspices of the International Industrial Relations Association, will appear eventually in the published proceedings of that Congress. We have the permission, however, to reproduce in this issue of the Bulletin (see pages 197, 198 and 199) a very informing table which was part of that paper. In it is set forth in condensed form the relationship between the principles and the technique of scientific management, the order of development of their application in ever wider areas of management, and their bearing on the new concept of national economic planning. It was the thesis of the paper that, assuming the necessity of some degree of collective planning of national industry, the basic technique of such planning has already been discovered by scientific management.

Industrial Employment Code[1]

Tentative Draft Presented for Discussion Only by the Industrial Code Committee of the Taylor Society[2]

Introduction

By MORRIS LLEWELLYN COOKE

Chairman, Industrial Employment Code Committee of the Taylor Society

THIS code is really a child of the Great War. Late in 1917 it was suggested to General Crozier that as his department, the Ordnance Department, was buying goods in great quantities it would be well to provide the conditions under which these goods were to be manufactured. At his suggestion members of this Society and others co-operated in preparing a tentative draft for what was afterwards issued over the signature of the Chief of Ordnance as General Order No. 13. Later that same code was issued under a different number by the Quartermaster General of the Army. Billions of dollars' worth of goods were therefore manufactured under these two orders.

When Mr. Kendall became president of this Society, it was suggested that it might be possible to develop for peace times a document somewhat similar to that which had been useful during the War. This Committee was ultimately appointed. Mr. Kendall made the effort in his appointments to have all points of view represented, except possibly the extreme right and the extreme left.

It is rather remarkable that we had almost no trouble in arriving at the tentative adoption of our original draft, which was twice as long as this present one. As a result of the discussion carried on at the Annual Meeting, and after a great many careful readings since by all kinds of people, the present draft which you have has been evolved. It has, of course, been considerably amended over the original document.

It has been suggested that I mention very briefly some of the changes that have been made in the document as it was first printed:

In Sections II and III certain recognitions are made which were not in the original document. For instance, in Section II these words have been inserted after the word "objective," "in such a way as to recognize and respect the rights and privileges of all concerned," so that the first sentence of that section reads: "Human relations and conditions in industry may be regarded as satisfactory if they result in the effective co-operative functioning together of employer and employes for the attainment of an agreed objective in such a way as to recognize and respect the rights and privileges of all concerned and also to secure for the workers the liberation of their creative energies and a recognition of their right to responsibility."

I would just like to say that this was done at the suggestion of two people for whose judgment we have the greatest respect, Boyd Fisher, an early and enthusiastic member of this Society, and Dr. Charles R. Mann.

---

[1] Presented by the drafting committee for discussion at a round table meeting of the Taylor Society, May 1, Philadelphia, Pa.

[2] Industrial Code Committee of the Taylor Society: Arthur E. Barter, Works Manager, The Plimpton Press, Norwood, Mass.; Henry Bruère, President, Bowery Savings Bank; John M. Carmody, Editor, *Factory and Industrial Management*, President, Society of Industrial Engineers: Morris Llewellyn Cooke (Chairman), Consulting Engineer in Management, 1520 Locust Street, Philadelphia, Past President Taylor Society: Gustave Geiges, Personnel Manager, Gotham Silk Hosiery Co., Inc., Philadelphia, Past President, American Federation of Full Fashioned Hosiery Workers: Lillian M. Gilbreth, Consulting Industrial Engineer, Montclair, N. J.; Francis Goodell (Secretary), Industrial Engineer, Naumkeag Steam Cotton Co., Salem, Mass., Willard E. Hotchkiss, Dean, Graduate School of Business, Stanford University, California; Gorton James, Director of Marketing, The Thompson & Lichtner Co., Inc., Boston, Mass.; Florence Kelley, General Secretary, National Consumers League, New York; Morris E. Leeds, President, Leeds and Northrup Company, Philadelphia; L. C. Marshall, Professor in the Institute for the Study of Law, The Johns Hopkins University, Baltimore, formerly Dean, College of Commerce and Administration, University of Chicago: H. V. R. Scheel, Vice President, Botany Consolidated Mills, Inc., New York: F. A. Silcox, Industrial Relations Director, New York Employing Printers Association, Inc.; Francis Lee Stuart, Consulting Engineer, New York; Mary van Kleeck, Director, Department of Industrial Studies, Russell Sage Foundation, New York; Joseph H. Willits, Professor of Industry, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia; Robert B. Wolf, President, Pulp Bleaching Corp., 200 Fifth Avenue, New York.

The most important changes have been made in Section IV on wages and earnings. In fact, this section has been practically rewritten, in response to a great many different criticisms. Perhaps the most fundamental one came from Professor Hudson Bridge Hastings at Yale, who took exception to the statement that the rewards for increased productivity should go out to the workers in the form of wages rather than in reduced cost of living. However, there have been a good many other criticisms of the section, and I want to take this occasion to thank Miss van Kleeck for having done yeoman service in whipping it into final shape. Those of you who are familiar with the history of General Order No. 13, and of this present document, know how deservedly our thanks are due to Miss van Kleeck for an active interest during and since the War.

I have here, and will read, a letter recently received from Professor John R. Commons, of the University of Wisconsin. He was one of the men who worked on this paragraph, and we do not seem to have completely covered his objections. In the second to the last line in paragraph two of this section, he suggests adding the words "unemployment reserves for both temporary layoffs and for dismissal wage for permanent reduction of force," after "increased earnings," making the last sentence of that paragraph read: "In a period of increasing productive capacity the use of a surplus in industry as between enlargement of plant or equipment or enlarged return to investors, or on the other hand, distribution of purchasing power through lower prices or increased earnings, unemployment reserves for both temporary layoffs and for dismissal wage for permanent reduction of force, must be viewed as a problem in keeping the balance between production and consumption."

I should have added that in the first part of the second to the last line in paragraph two of Section IV, after the words "increasing productive capacity," Professor Commons suggests adding "or increasing price levels," so that that sentence with the two amendments suggested will read: "In a period of increasing productive capacity or increasing price levels the use of a surplus in industry as between enlargement of plant or equipment, or enlarged return to investors, or, on the other hand, distribution of purchasing power through lower prices or increased earnings, unemployment reserves for both temporary layoffs and for dismissal wage for permanent reduction of force, must be viewed as a problem in keeping the balance between production and consumption."

He adds: "On the general theory running through your statements, I do not attach much weight to the idea of balancing production and consumption except as involved in providing unemployment reserves in prosperous times for distribution in depressed times, i.e., transfer of part of surplus to unemployment reserves. I attach more importance to the margin for profit as affected by general rise or fall in prices. Since individual employers cannot control this, the best they can do is liberal unemployment reserves. On this subject you may be interested in manuscript I am sending under separate cover on theories of share of profit versus margin for profit. Your underlying theory is based on share of profit, which I discuss, whereas the big thing is margin for profit. I reconcile the two, so far as wages are concerned, by unemployment reserves."

Anyone who wishes to advise the Committee on this point, or who is otherwise interested in it, can borrow Dr. Commons' manuscript which covers the theories of share of profit versus margin for profit.

The next change of any considerable moment has to do with our limitation of night work. We received a great many criticisms about the unqualified statement that night work should be avoided where possible and should never be required of women employes. We have, therefore, inserted the words "after 10 P.M." This seems to be the generally accepted technical definition of night work.

We also, in response to a number of suggestions, cut out the sentence, "Experience itself is the only arbiter as to what hours of labor should be."

In Section X under "Employes' Group Relationship," which of course is fighting ground, the Committee came to the conclusion that it had been a bit provocative in the language used. We have changed the words "collective bargaining" to "collective agreements." As you all know, collective bargaining is the technical language of the labor movement, and I may say of industrial strife. As this whole document is based on the theory that there is some way of adjusting differences in industry without the bitter clashes we have had in the past, we changed that technical language to read "collective agreements." The term has the same meaning, but better expresses our approach.

Another point has come up as a result of an invitation issued to one of the railroads to participate in this discussion. The company regretted on the ground that theirs was a *transportation* company while the Code purported to apply only to "industrial enterprises." I think the Committee can easily take care of this by a few minor insertions.

Again, we have cut out the term "company unions." I am sorry Mr. Ritchie is not here, but Mr. Edelman is. This is another instance of what I meant when I said that perhaps we had been a bit provocative in the language we used. We each of us have our own ideas about what "company unions" are and what they signify in industry. Some of us are very decidedly on record about them. But we found that by taking the whole range from the fairly conservative employer on the one side to the fairly liberal labor leader on the other side, the term "company union" has meanings inappropriate to this document. We tried to dodge the difficulty by putting quotation marks around the term, but that did not seem to accomplish what we wanted. However, we are not conscious of having weakened our first statement or having materially changed it except by these rather minor changes in language.

The word "standard" was put before "union" at the last meeting of the Committee. The feeling was that we wanted to get away from being so specific as to say that we had in mind either an A. F. of L. union or a dissenting labor union, so we said "independent" labor union. Then some of our union friends, among others, thought that was a bit provocative—that there were some labor unions that were independent, and some that were not—so we tried to meet that simply by putting in the word "standard," which includes orthodox labor unions and dissenting labor unions—almost any kind of labor union that stands on its own feet. The Amalgamated Clothing Workers of America, for example, is a "standard" labor union.

Another criticism of the Code that has come from a good many different people, including members of our Committee, concerns its length. The thought has been frequently expressed that the Code would be more generally useful if it could be made shorter. We have already cut it in half. I think the sense of the Committee is that it is easier to end up—if we ever do—with adopting a code that is short enough if we start with something that is fairly elaborate, rather than to start in with something like the Ten Commandments and develop the other way. I do not believe that we can say at this time what the ultimate action of this Committee will be. Personally, the Code seems to me to be of a pretty fair size now.

Another criticism that has been expressed by some local people is the use of the term "code." Of course, we are right from the standpoint of the dictionary. Perhaps the feeling has been that the sort of thing a code implies is something like a set of laws that are rather inflexible. The real reason we object to the term "code" in this field is that at present we know so little. The field is so new that we have not become accustomed to codifications of any kind. When I joined the American Society of Mechanical Engineers—I am not going to admit how many, but it was not *so* many, years ago—we did not have any codes. I believe I am right in that statement. Now we number our codes by the score. We have gone far within a generation.

Perhaps when the fields of industrial engineering, human relationships and production engineering have been developed further, and we know more than we do today, codes will have a familiar ring to our ears, and we shall have become more accustomed to them; certainly the word "code" will not mean to us just what it does today.

One of the reasons why we have gone ahead as far as we have on this road toward a useful and acceptable code is that we decided that we would not fix any date for its adoption. The Code may easily be quite as useful unadopted — before its adoption—as it will be after. If we can keep this group interested, perhaps we can remain a standing committee for some years to come and keep tinkering with it. The moment you begin to tell people you are going to close the doors, they get excited. There is ample time for every viewpoint to be expressed, before any formal ratification takes place. The Committee is on its knees begging you and anybody else to give us any ideas that you may have as to how this instrument can be made to represent the best practice in American industry.

There is a misunderstanding in some quarters certainly as to just what we have tried to do here. We say that we have taken these practices out of the experience of the top half of American industry. Now, that does not mean that there is any plant in any industry, even in the top half, that can say, "Yes," to everything in this document; but it does mean that there is nothing so far as I know in it that is purely theoretical. In other words, you can go to plants in the top half of American industry and find in practice practically everything in this document, so that it is not, as has been said, the counsels of perfection, neither is it purely theoretical.

The Code

I. Purpose, Scope and Use

This code is offered for use by those persons who are responsible for working conditions and human relations in industry, *who wish their procedures and policies to be rated above the average in standards of employment in the United States.* It is not a counsel of perfection. Leaders who keep ahead of the procession in advancing standards for labor as industry increases its productive capacity will regard this code as a minimum. But perhaps half the industrial enterprises in the nation may find themselves below its requirements in some particulars.

All, however, are invited to check their conditions by it point by point; to report those points at which a higher standard has been proved practicable; and to experiment with those possibilities not yet attained by them.

If the word "code," through its association with legal procedure, implies some form of compulsion, or if through its usage in mechanical engineering it suggests greater precision than is yet possible for human relations, it should be pointed out that the compulsion and the precision of this code rest upon the accuracy with which it has formulated actual experience in industrial establishments. The group which has drafted it has only sought to record good practices as encountered in what may be described as the upper half of American industry. As industry in the United States is essentially dynamic and progressive, the good practice of today may be expected to become the average tomorrow and the minimum the day after. The proposal is made, therefore, that the code be rewritten as often as the experiments of leaders in the improvement of human relations and conditions demonstrate that better practices and higher standards are feasible.

Industry as used in this code may be defined as including *those branches of economic activity in which men and women are employed in numbers for wages in occupations involving the use of machines or auxiliary to them; or employing workers in subdivided tasks.*

Employment as used in this code includes *human relations and conditions in an enterprise or an industry.* This idea further subdivides into wages and earnings; hours of labor; security of employment; policies and procedures as to selection, training and promotion, including minimum age, provision for older workers, personnel organization, supervision and foremanship; safety and health in work, including physical conditions of workrooms, protection against accident and occupational hazards, medical supervision and attention; provision for representation of workers' interests and points of view, including possibility of a hearing in an individual grievance and the more positive opportunity to make suggestions for improvement in processes; and arrangements for the collective functioning of employes as a group.

As conceived by those who are formulating the code, the persons "responsible" for employment, for whose use it is designed, include in the first instance, the employer, who as financial owner of the business has the power to change conditions. Perhaps he has shared his power and his responsibility for human relations with some organization of employes within his workshop or in the industry as a whole; in that event, the code is addressed also to the employes as members of a group and to the leaders chosen by them. Sometimes the individual owner or manager has given place to stockholders, more or less numerous, who are the owners; and management, employed by the owners, constitutes a separate group of individuals who share the responsibility for conditions of employment. In those rare but significant instances in which plans are in effect for co-operation in management on the part of trade unions, the leaders and members of the unions share also the power to put this code into effect. In public utilities the public as a whole becomes responsible for fair wages and good working conditions and relationships. *The code is addressed, therefore, to all who have any degree of power to put its provisions into effect.*

II. Criterion of What is Satisfactory in Human Relations and Conditions

Human relations and conditions in industry may be regarded as satisfactory if they result in the effective co-operative functioning together of employer and employes for the attainment of an agreed objective in such a way as to recognize and respect the rights and privileges of all concerned and also to secure for the workers the liberation of their creative energies and a recognition of their right to responsibility. Thus human relations and conditions are not separate from management, but an essential phase of it and dependent upon its competence.

III. Objectives of an Industrial Enterprise

If the criterion just stated be adopted, it is obvious that the accepted objective of the enterprise must be large enough to comprehend the interests and relations of all groups in industry, including the relations of employer to employe, the relations of colleagues within the management to each other, the relations with competitors, and finally the relations with customers. Such an objective may be defined as *supplying goods and services with the least possible waste of human effort and materials, at the lowest prices consistent with good quality of product, fair wages, healthful working conditions and safety and fair return for capital invested.*

IV. Wages and Earnings

If industry were static, it might be possible to formulate a statement about wages and earnings which could serve as a measuring rod in determining what the wage rates should be. In a time of constant change, however, when output per worker increases, due to technological changes, changes in method and increased skill both of individuals and of labor as a group, wages and earnings must be looked upon as a problem of relationships for which no constant formula has yet been devised. It is for this reason that *the method of determining wage rates as well as the wage scale established is a vital factor in employer-employe relations.*

As productive capacity increases with the application of new technological discoveries and with the increasing competence of management and labor, all the factors in the equation of relationships of wages, prices and return for capital must correspondingly change. *The necessity for correspondence between productive capacity and consuming power* gives added reason for "fair wages and good working conditions" which make possible a rising standard of living for all wage-earners and permit them to function correspondingly as consumers. Purchasing power is determined by the price level as well as by the wage level. *In a period of increasing productive capacity the use of a surplus in industry as between enlargement of plant or equipment or enlarged return to investors or, on the other hand, distribution of purchasing power through lower prices or increased income must be viewed as a problem in keeping the balance between production and consumption.*

Review of the wage scale at regular intervals becomes therefore necessary. The earnings throughout the year of individual workmen must be regularly analyzed and compared with the standards already established in the industry and in the locality. Cutting rates should be avoided as demoralizing alike to production and to the community's standard of living. On the other hand, increases in rates should be based on more than local, temporary change in productivity. All wage determinations should be based on facts and procedures which insure at least relative permanency.

The principles of scientific management emphasize that setting the rates of compensation involves *study and standardization of all factors affecting the performance of a given task,* including the keeping of machinery in good condition, provision of proper tools and good materials and the maintenance of good working conditions, as well as careful selection and training of workers. *The basic minimum for the lowest paid adult worker should be a living wage, with proper differentials established for skill and experience.*

Time and motion and related studies should be regarded as part of this task of standardization and a tool for the discovery of facts about costs. *Such studies should be a joint enterprise between labor and management.* Before time study is undertaken, its purpose should be frankly explained to the operative who is to be observed; and it should not be practiced except by those who have mastered its technique. Secrecy should never be permitted; frankness is an indispensable condition for its usefulness.

Profit-sharing has not yet reached the stage in experiment where it can be put forward as an agreed record of experience, and still more tentative is the whole subject of employes' stock ownership. At this time it can only be urged that profit-sharing and employes' stock ownership be studied.

V. Hours of Labor

A working day of eight hours has been so generally accepted in industry, as meeting the social needs of the worker and as a safeguard of efficiency in production, that the burden of proof rests heavily on any longer schedule. This limitation should apply also, of course, to continuous twenty-four-hour work, which should be divided into at least three shifts. A shorter working day is under discussion in some industries and is worthy of study in all work places where increasing speed of production, due to improvements in equipment, has resulted in a marked increase in output. *The needs of the workers for leisure and for protection against excessive fatigue set maximum limits within which management must be competent to devise methods of production to fulfill these needs.* Overtime representing excess over the regular schedule should be paid for at a higher rate of at least "time and a half," both as an inducement for management to keep within the standard schedule and as a recognition of the right of the workers to their leisure.

The working week should always insure at least one day of rest in seven. The Saturday half-holiday is now well established, especially to insure the average if the preceding five days are longer than eight hours each. The five-day week has reached the stage of experiment, and should be watched by all progressive managers. It is to be expected that *the world's increased productive capacity should result in increasing leisure for all. It is to the advantage of a proper balance between production and consumption that industry should reduce daily and weekly hours as higher levels of output are permanently attained.*

That the legal and customary holidays of the community should be observed needs no emphasis, as this is commonly accepted in well-managed enterprises. Equally desirable is the growing practice of giving summer vacations with pay.

Night work (after 10.00 *P.M.) should be avoided where possible and should not be required of women employes.* As brought out in briefs in defense of labor laws prohibiting night work for women, presented in the Supreme Court of the United States and in the state courts, it is the world's experience that, in the interest of the health and social well-being of the woman worker and of the community, she should not be required to work at night in industry. Investigations have shown that the majority of women who work at night in factories do so under a heavy burden of caring for their homes by day and working in factories at night, and it is to their interest and that of the community that they should be protected against this double burden. The other recommendations for hours of work by day and by the week apply with equal force to men and women.

Minors under the age of eighteen years should never be employed longer than eight hours a day and never during night hours.

VI. Security of Employment

To insure relative permanency and continuity of employment should be an objective of good management.

In so far as frequent changes in the working force arise out of lack of adjustment of individuals to their work, the causes should be dealt with as problems in personnel organization, discussed in a later section. Involuntary unemployment which results from the failure of the individual firm to hold its own, or from seasonal conditions in the industry as a whole, or from general business depression, is a problem involving many elements of management beyond the scope of discussion in this code. However, security of employment should be emphasized as one of management's major objectives. (1) *A definite guarantee of employment* Study *for a specified number of months in the year and provision of funds to make payments to workers for whom employment is not provided for the guaranteed period, is being demonstrated as a practice which should be studied by all industries in the interest of the workers, the community and the enterprise itself.* Continuity of employment is coming to be looked upon as a net result of all the elements which enter into good management, and if so regarded it constitutes a stimulus to the better performance of all the functions of management.

(2) *Technological improvement*—the invention and adoption of human energy-saving equipment and the discovery and adoption of improved methods of work—*should be a matter of continuous concern and of specialized responsibility within the organization.* These should be a matter of interest because they constitute the solid foundations of stability within the industry, and that interest should be *continuous* because improvement by small increments permits adjustments to change on the part of the individuals concerned and avoidance or reduction to a minimum of what has come to be called technological unemployment. Especially adjustment to change on the part of the older, less flexible workers is promoted if change is by a succession of moderate adaptations instead of periodic, radical tech-

nological upheavals, and thus the imponderable assets embodied in the experience of the older workers are preserved for the organization, a subject to which reference will be made in a later section.

(1) *Sudden termination of employment, without warning and without financial compensation, is contrary to good practice in employment.*

Procedure for making changes among employes should be formulated as part of managerial policy and should have regard for the general objective of security. The whole operation should be studied and a forecast made of the effect of changes upon personnel, including the possibility of retraining the present personnel for the new processes or the transfer of these individuals to other processes. Rates and the reassignment of employes to be affected should be studied with a view to maintaining the level of earnings of those affected or raising it if the new process results in such a lowering of cost as to make possible changes in prices and wages.

(2) If displacement of employes is unavoidable after all the other possibilities have been studied, *a compensation wage can be paid as a lump sum or in weekly payments, covering a reasonable maximum period to make it possible for the worker to find another position. The personnel department should assume definite* (3) *responsibility in co-operation with public employment offices and other agencies to assist the worker in finding other employment.*

VII. Personnel Administration

To secure, develop and maintain a competent working force is the basis of lasting success in an industrial enterprise. Provision for attaining this objective through competence in the personnel function is of the essence of an employment code. The personnel function may be organized in a variety of ways, according to the needs of the particular enterprise. It should, however, be so developed as to insure maximum success in selection of the right employe for the right job; the training of the employe for the best performance of his job; and his promotion to more difficult work as capacity and ambition are discovered. As women workers constitute a substantial and permanent part of the working force in American industry, it is obvious that success in attaining this objective demands that the opportunity for selection, training and promotion be extended to women and men alike, giving to women as to men a chance to develop and use their best capacities in work.

Principles and procedures for good personnel work, judged by this general objective, will affect the choice of foremen, their training for their work, and in general the mechanism for proper supervision of work. *Foremanship should be regarded not merely as an obligation to keep machinery in order and to secure a maximum output, but as a responsibility for leadership of groups of men and women who are freely cooperating in the task of production.*

VIII. Safety and Health in Workrooms

Engineers and architects are rapidly developing standards for the physical conditions of workrooms, which should make unnecessary a detailed statement on this point, except to indicate certain basic points demanding constant attention by management.

The best-managed enterprise will be the safest, because it will provide for machinery suited to use by human beings without risk; clean floors and removal of waste and debris which cause accidents; proper hours of work to avoid fatigue; and a wage policy which eliminates unreasonable pressure for speed resulting in carelessness as to the use of safeguards. No new machine or process should be installed until attention has been paid to the proper safeguards. Moreover, *in a well-managed plant, supervision insures full knowledge of the circumstances of an accident as a basis for prevention of a similar occurrence in the future.*

The uses of new and hitherto untried chemicals in manufacturing processes make necessary constant expert advice regarding their effects on the human body. In industries in which such hazardous chemicals or other materials are used, *the personnel function must provide proper medical and technical supervision to prevent injury or to counteract it.* They require also the elimination of youth under twenty-one years of age, as more susceptible than adults to injury from poisons and less trustworthy in carrying out self-protective measures.

In the larger industrial states, the state labor departments may be called upon for expert advice, and in a number of them special codes for physical conditions in workrooms and special arrangements for particular industries have been adopted by industrial commissions and have the force of law. These legal arrangements, of course, are accepted as a minimum in all industries.

IX. Policies Regarding Age

Progressive personnel policies establish at least sixteen years as the minimum age for employment, although employment at fourteen years of age is permitted by the laws of the majority of states. Seven have adopted the fifteenth or sixteenth birthday for manufacture, and management in many enterprises has raised the standard beyond the legal requirement. Experience shows that minors of sixteen are more capable of developing into competent workers than younger children and that, on the other hand, the employment of children has serious social consequences in denying them a full measure of elementary education and injuring them in mind and body. A positive, constructive policy will include co-operation with the public schools in vocational guidance and in possible vocational training, and this co-operation with the schools becomes more feasible when the age limit is set at sixteen.

At the other end of the scale of ages, the policy of discharge because of age has serious consequences. *A thoroughly well-considered personnel policy which has included the training, development and promotion of workers will result in continuing the older workers as valuable assets in an industry; and in recognizing the obligation of an industry to prevent the social waste of unemployment of men and women who are still far from old age.* If in change of processes the older employe is incapable of measuring up to the requirements of a new method, the policy already outlined for insuring security of employment or compensating when displacement is necessary should be applied here with greater care, since the older worker encounters greater difficulties in finding other employment. *An enterprise should also avoid setting an upper age limit for hiring workers, since this has consequences for industry as a whole, of much the same character as the separate enterprise encounters in the obligation of retaining older workers.* The whole subject of retirement pensions should be studied.

X. Employes' Group Relationships

Aside from the technical developments which constantly cause change, there is the ever-present fact that human relations must be renewed day by day. These day-to-day applications of principles and their changes to meet changing conditions suggest *the desirability of definite group organizations of the workers, with clear responsibility for functioning as a group in attaining the accepted objectives of the business.* The purpose is to create such conditions of confidence as will result in the least waste of human effort in avoidable friction, and the maximum contribution of the individual through his work to the economic service rendered by the business employing him. *Unprejudiced study of the most effective forms of organization of labor for functioning in relation to management as a science is an obligation resting upon progressive managers, in the interest of good management as well as in recognition of the importance of satisfactory human relations in industry.*

Labor's right to recognition as a party to collective agreements is now, in this country, so widely recognized as to be generally beyond debate in theory and beyond contest in practice. That right may be exercised through various forms of organizations which can, however, perform the function of representing the employes only if control of the workers' organization rests fully and really with the workers themselves. With whatever form of workers' organization an employer must deal, fairness, good faith and complete frankness about all governing facts are the surest means to understanding and agreement.

Any condition of the work contract binding the workman not to join an independent (standard) labor union is to be deprecated. Such a promise is necessarily coerced and its exaction is born of lack of confidence. It therefore destroys at the outset the willingness and loyalty out of which the co-operative spirit must grow and engenders instead either apathy and servility or a covert hostility. It promotes secret association apt to flame into violence. Furthermore, the trend of the courts is to the opinion that such a promise is against public policy and hence unenforceable.

XI. Employment Records

The personnel function can be properly discharged only if adequate records are kept, upon which decisions regarding individuals, their development and promotion can be based. Co-operation with governmental departments in providing data on employment and earnings for current use as a guide in business policies is a contribution of the individual establishment to general industrial stability.

Discussion

J. O. Hopwood.[3] The Industrial Employment Code has been ably worked out, so far, as a guide in the development of human relations in industry. It is only by way of some extension or broadening of its terms that I can suggest a few points of change. These relate principally to our conceptions of the organization of industry in society.

The Code recognizes that industry as a whole is made up of individuals and organizations of individuals, each carrying on an economic enterprise by which commodities or direct services are produced and sold to consumers in the community.

There is no intensive organization of industry as a whole under conscious direction and little of such organization in any particular kind of industry. The units of composition are the different enterprises operating together, entirely under the control of economic laws or under economic laws plus limited agreements, through associations developed in some industries in recent years, or through public franchises or governmental regulation.

Traditionally, enterprises are individual and competitive. Human relations in industry have been, likewise, individual and competitive and, therefore, selfish and sometimes anti-social.

In the later years of the industrial revolution, however, we have had the development of the modern corporation, which is a social development fundamentally different—that is, it is and must be co-operative in nature. It is a single enterprise, competitive with other enterprises in the community but it is made up of individual persons who must be co-operative and work together as a whole. Whatever they produce, they produce as a whole.

The organization comprises a division of labor ranging all the way from the functions of the highest positions in management to the functions of the lowest positions in routine operations and, at the same time, the integration of these functions to operate together as a whole. Every individual is a producer whether he is in management, the shop, the clerical office, the sales force or elsewhere, and economies in any line affect the cost of production. This unity of organization should be, I think, more definitely set forth in the Code.

Our difficulties in human relations in industry are the result of management's having held on to the old traditions that men are individual and competitive. We want co-operation but fail to recognize the essentials of co-operation in organization.

Wages are generally thought of as competitive. We want cheap "help" but we want co-operation from these workers. We speak of the workers as a *class* different from the rest of us. We speak of producers and non-producers and make classifications of accounts that way. What justifications are there for such distinctions? We are all workers and we are all producers. We need to develop the sense of partnership. Workers are not anybody's helpers. We are all members of the producing organization and, I think, the Code should bring out this fact as much as possible—that labor and management, in the final analysis, are not two distinct parties joined together by a contract in an enterprise but, in a single organization, management is labor, comprising the planning and executive functions, differing from the lower supervisory and routine functions only as to breadth or scope and, therefore, control. The Code acknowledges this in some measure but not fully. The idea of oneness, I think, should be brought out.

We have not learned the full significance of integration. Wages among individuals competing for work in the community are competitive but when individuals become members of an organized enterprise they are not competing with others for days' work. A comparison of wage rates among different organizations shows wide variations in rates for similar occupations and much divergency from any figures assumed to be market rates.

The individuals become trained and adapted to particular situations, they assume a co-operative relationship with all of the other members of the organization, and it is essential that their wages should be upon this basis—that is, they should bear relationship to the scope and proficiency of the individual's functions in the organization. Salaries and wages throughout the organization are essentially of the same nature and should be co-ordinated upon this basis by means of a graduated master scale of rates for the organization as a whole, not for departments independently. Moreover, in the distribution of the income of the enterprise, the portion which goes to salaries and wages should be as large as is consistent with the portion taken for profits and the price of product to consumers.

---

[3] Superintendent of Employment, Philadelphia Electric Company, Philadelphia, Pa.

These relationships with regard to wages enter into the determination of fair wages and the contribution of industry to the purchasing power of the community. I think they should be more definitely set forth in the Code in connection with its consideration of fair wages and the keeping of a balance between production and consumption.

R. W. Johnson.[4] I have accepted the word "code" as something to be lived up to, but I hardly believe that this Code is being lived up to in every respect by any one company at present. It has merit, however, and I am not afraid of any criticism of the word code as being too binding.

I would suggest that the Code include a section on promotion. This should serve as a guide in setting up and maintaining wages commensurate with skill and in insuring advancement in an occupation or trade.

The subject of training is of great interest to me and I should like to see the Code deal more fully with it. Apprentice training is necessary in some skilled occupations. Older employes should be urged to advance themselves by training outside the shop. And foreman or supervisory training is also an important subject for discussion.

It seems to me that the statement under "Security of Employment" should be strengthened by stating positively that at the time of technological changes all employes should be retained and every possible transfer made before any reductions in force or acquisitions of new workers occur.

Under Section VII there is a statement about extending opportunities for women workers. I should like to hear some discussion of that point and if possible to have some definite statement in the Code on the relation between men's and women's wages.

My final question grows out of a statement under Section IV that "All wage determinations should be based on facts and procedures which insure at least relative permanence." I presume this refers to the cuts and increases in rates mentioned in the same paragraph, but I am not quite clear as to what is meant by "facts and procedures" and believe the Code should be more explicit in its statement.

John W. Edelman.[5] I want to start by thanking the Taylor Society for giving me some very excellent material to read to a series of strike meetings I addressed this morning. It was Mr. Hines' speech on overproduction, an urgent problem in the full-fashioned hosiery industry today. Mr. Hines' address showed a remarkable grasp of the present situation in a highly competitive industry and outlined pretty much the program which my union is urging in the industry it represents. I did not look for such excellent ammunition from this meeting!

In regard to the Code, the most appropriate thing I can say is that after actual contact with various types of management this attempt to formulate proper procedures seems so far in advance of anything I am encountering at the present time that it would seem almost captious to discuss critically any of the suggestions here outlined.

There are, of course, a number of suggestions I could make if I wished to achieve my particular ideal. In general, the proposed Code is so far in advance of actual practice that there is little need for minute dissection of particular points.

My reaction to some of the points made by the previous speakers is somewhat like that of the so-called "hard-headed," practical American Federation of Labor unionist who condemns as visionary any advances by management engineering and any liberal attitude toward social problems. My reaction is that the engineers are doing the dreaming. We have had here today a representative of management suggesting a proper ratio between profits and wages, and a mathematical ratio for allocating the share labor, management and capital should receive from the yields of industry. Any such plan presupposes an effective organization, not yet approached, of present-day industry. Until we make up our minds to that organization it seems to me hopeless to try to translate this type of discussion into any concrete form. Until a given industry is sufficiently organized, either through the establishment of monopolies and public regulation, or through voluntary agreements as a result of the modification of the anti-trust laws, and until present obstacles to labor organizations are overcome, it is futile to discuss any semi-ethical proposition as to what should or should not be granted either to management or to labor. That is my view of the matter. At present, it seems that nothing can be done about it except for workers to make an intense struggle for the organization which will give workers some degree of economic bargaining power. And those interested citizens who can influence public opinion should strive for minimum-wage laws or standards which will protect those who cannot protect themselves.

---

[4] Head, Employment and Service Department, Leeds & Northrup Company, Philadelphia, Pa.

[5] Research Director, American Federation of Full Fashioned Hosiery Workers, Philadelphia, Pa.

It seems to me quite out of the question for any single establishment, under present-day competitive conditions, to set up a given standard unless the industry in which it is operating applies comparable standards. I have no doubt that in every industry there are groups of employers who would like to apply higher standards than those that generally prevail, but they are prevented by the inevitable play of competitive forces from putting them into effect.

I am convinced, for example, that the program of the Cotton Textile Institute, which seeks to curb overproduction by barring women and children from night work in textile establishments, will inevitably defeat itself if another boom period should develop in the textile industry. There is, at present, no way in which the better type of manufacturer can safeguard himself against the small fellow in the Carolinas, Alabama, or elsewhere, who will run twenty-four hours a day when the opportunity arises. In the long run it will have to be some kind of organization of the workers, plus a great deal more legislative control than now exists, which will enable the cotton-textile industry and the Cotton Textile Institute to get out of the economic morass in which it is now fairly well embedded.

In conclusion, just let me say that I cannot see how any discussion on the subject of technological changes can avoid being very far fetched unless social control is also discussed. The protection of the skilled workers is an admirable ideal to advocate but utterly without hope of accomplishment except through strong economic organization, and organization can only exist in those industries where technological changes have made skill a factor. In the large mass of American industry today skill is not a sufficient factor even to enable economic organization adequately to protect labor standards.

Insufficient attention was given in designing the Code to the emotional conflicts which develop between management representatives and workers' organizations under present conditions. Despite the fact that both might well recognize the theoretical solidarity of interest between capital and labor, this is almost impossible to achieve at present. Perhaps clearer recognition of that fact should be included in this study.

I strongly endorse the statement of Mr. Johnson that a more objective technique should be worked out by the foremen or supervisory force. It is right there that you are getting your greatest amount of harmful friction, and the responsibility is much more on management than it realizes at the present time. The foreman is the shock absorber that management uses to protect itself while it maintains a seemingly rather altruistic attitude. The insecurity of the foremen is also a tremendously important contributing factor in the emotional difficulties involved in conducting an industrial enterprise without friction.

These are difficult and serious problems which can only be overcome if consideration is given to the tremendous complexity of the economic and social factors which go into the making of the whole industrial structure.

James T. Young.[9] First let me say a brief word in appreciation of the Society's allowing outsiders to come and express their views. I think we should treat that courtesy with a great deal of consideration and I shall, therefore, make my remarks very brief. I want to call attention under Section III to the sentence, "Such an objective may be defined as supplying goods and services with the least possible waste of human effort." Then under Section X there is the phrase "with clear responsibility for functioning as a group in attaining the accepted objectives of the business."

We define the objectives and then ask that labor be given the privilege of accepting responsibility for one or all of them. I do not believe that labor wants anything of the kind. Organized labor especially has again and again disclaimed any desire to accept responsibility for the success of an enterprise. Beginning with the head of the miners' union, in correspondence with Mr. Stone several years ago, down to the present there have been repeated statements that the employer is the one who accepts responsibility for the success of an enterprise and that organized labor does not participate or wish to participate in that responsibility. Mr. Gompers objected for many years, and very forcibly, to such responsibility on strong economic grounds.

---

[9] Professor of Public Administration, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia, Pa.

Again under Section X the Code endorses labor's right to recognition as a party to collective agreements and further states that "any contract binding labor not to join an independent (standard) union should be deprecated." This means that the force of the Taylor Society is put behind the declaration that there should be no anti-standard union contracts.

That may be a very wise step, but I want to point out to you that before it is formally taken it should be expressed in a more elastic manner, so that those employers who wish to guide themselves by the accepted wisdom of this Society—and I think a great many will wish to do so—may find here a statement of principles which will adapt itself to the kind of unions they are dealing with. This is a rigid, absolute statement. In my opinion it should not be.

How ought this to be worded? I should say, let us not "deprecate." Such a statement should be made only when obnoxious, coercive action has been taken. The Code then goes on to say, "Furthermore the trend of the Courts is to the opinion that such a promise is against public policy and hence unenforceable."

The Supreme Court is among those that have shown a "trend." The trend is very clear cut in the Hitchman Coal case and in the Red Jacket Consolidated Coal Company case, which was brought to the Supreme Court on an application for review which was not granted. In both cases the attempt to violate a contract of this nature was before the Court and it showed no tendency whatever to overturn the contract. We could not accurately say, therefore, that it is now the trend of the Supreme Court to refuse to enforce these contracts. We here might vote unanimously against such contracts—and we probably should—but such a rigid, absolute statement commits your Society to a policy which no man here would have advocated in the Red Jacket case.

This case has been grossly misrepresented to the public. It was an instance of a union, closed-shop agreement faithfully observed on both sides until the surrounding mines in the neighborhood of the Red Jacket mine had a dispute with their union. The United Mine Workers then proceeded to close all the mines in the vicinity. When they came to the Red Jacket the latter protested that they had complied with all union demands and did not see why they should close. Under protest they were allowed to operate for a couple of months but were then closed with all the others. Only then did they take the extreme, drastic measure, which I submit your Society should allow them, of making an anti-union contract to protect their existence.

I suggest, therefore, that this phrasing be changed so that an employer following your advice would not be left completely defenseless.

Henry Tatnall Brown.[7] Before we proceed to a general discussion I should like to make a few points.

Under Section I the statement is made that more than half the industrial enterprises of the country may find themselves below the requirements. I believe this should be changed somewhat as the inference is that the other half is up to or above these requirements. I hardly believe that such an inference is true. I imagine so few industries could measure up to these requirements that it occurred to me that an Industrial Code Club might be organized by the Code Committee—the requirements for membership in which would be 90 per cent performance in these matters, as judged by the Committee. This might inspire others to bring their organizations up to such a standard. Periodic dinners of the group, similar to the one arranged by the Industrial Relations Counselors for those organizations which have adopted unemployment insurance, would prove inspiring.

Having advanced these two suggestions, I now call for general discussion. I believe Mr. Cooke wishes to answer parts of Mr. Young's remarks.

Mr. Cooke. I am very much interested in Professor Young's statement as to where responsibility for management lies. I can recall being told a number of years ago by the then president of the Glass Workers' Union that when they entered into an agreement with the manufacturers as to wages they tendered certain suggestions as to management. They were told that this was none of their business in considerably stronger language than I dare use.

---

[7] President, Brown & Bailey Company, Philadelphia, Pa.

At more than one conference I can remember Sidney Hillman's making the same kind of statement. When questions of management were put up to him he said in effect that they were not the job of labor. But I have seen Sidney Hillman change and I would have supposed that Professor Young would have observed the beginnings of such a change not only in the Amalgamated Clothing Workers of America, but in a considerable percentage of labor unions the country over. Certainly if you were to ask Mr. Willard of the B. & O. Railroad whether he had ever called on the workers to help him on questions of management, he could not give you a positive "No." Yet I recall his calling the union leaders together, at a time when his company was going to have to meet some heavy bond payments, to ask their co-operation in putting over a particularly difficult task. An extreme example of this forward movement is the Sheeting Workers Union of Salem, Massachusetts, whose last agreement provides that in return for being permitted to set up certain machinery for studying and economizing on machine operations, the employers agreed to a study of sales techniques. This union has further made some very valuable suggestions as to budgeting and cost-keeping.

This Society does not care, except indirectly, what the attitude of labor unions is with regard to this Code. We are trying to set up standards of human relations which will make for the most effective productive machine. Up to the death of Taylor the labor unions were 100 per cent wrong in the matter of limiting industrial production. Now we have seen them change, not completely, I am thankful to say, because I think a slow development is much safer. What the labor movement thinks on a subject, however, will, I hope, have only an indirect bearing on what we shall say about it; likewise with respect to what the average manufacturer thinks. I do want to say, however, that there is plenty of evidence that labor unions are changing their positions and that the drift is very promising.

Mary van Kleeck.[8] I am very much interested in Professor Young's having selected that particular incident in the history of the United Mine Workers to illustrate his point. He selected the sickest industry in the country and an incident in the career of President Lewis which some labor leaders at least would consider to be indicative of poor leadership. So much is known to most of you. What is not known is that while Mr. Lewis was taking the attitude that management was the responsibility of the coal operators and that the miners were interested only in keeping up wages whether the mines earned anything or not, the union itself in the State of Illinois was party to a scheme of day-to-day negotiations between miners and operators beginning with the Pit Committee and carrying through to arbitration machinery. The miners themselves would say that they are not participating in management, but they are agreeing as to exactly how the wage scale is to be applied to different situations, how hours of work are to be scheduled, how turns of cars are to be arranged, and so on—all phases of mine management. When Mr. Lewis' administration failed to make a new contract for the miners' national organization at the expiration of the Jacksonville agreement, just one district of the United Mine Workers was able to make a contract and that was the Illinois field where this co-operative, participating relationship had been in effect.

If Professor Young had stated that to get labor's interest and co-operation the accepted objective of industry must be large enough to include the interests and relationships of all groups in industry, those of employer and employe, of management and of labor, and finally of consumers, he would have been in agreement with the Code. In other words, the Code does not propose to ask labor to co-operate in an enterprise which has not considered its broad relationships in the whole economic community; what is suggested is that labor function in an enterprise which has an objective worthy of our present economic possibilities.

May I turn for a moment to Mr. Young's other point? The Code does not say that an employer who has an unsatisfactory contract with a union may not make one with another union. It does not leave him "defenseless" against the practices of a given union; on the contrary, it sets up standards for a new functioning unionism. But it recognizes that the individual employe is in a weak position when he presents himself for employment, and it is, therefore, to be deprecated that he be required to sign on a dotted line that he will or will not join any kind of an organization, or else forego the job. And it seems to me that we are pretty well "jacketed" in our industrial-relations policy in this country if we are going to consider the Hitchman and Red Jacket cases as the last word in Supreme Court decisions. The Interborough Rapid Transit case in New York brought out the reasons why these same "yellow dog contracts" are not good public policy, and growing experience with constructive trade unionism, which functions in relation to management, is likely to modify court decisions.

---

[8] Director, Department of Industrial Studies, Russell Sage Foundation, New York, N. Y.

Earl S. Sparks.[9] I am speaking personally and not in my capacity as Secretary of the Metal Manufacturers' Association of Philadelphia. Mention is made in the Code of the worker's right to bargain collectively. I take it that this means the right of individual contract is recognized. In my experience with union contracts in force in Philadelphia I have found that in practical effect they abridge the right of the individual worker not to join a union. In other words he cannot obtain employment in plants where union contracts are in force unless he agrees to join within a specified time the union holding that contract. In operating an employment department in connection with the metal trades of this city we cannot send a non-union man to a union shop unless he will agree to join the union. I think if you are establishing the right of individual contract you should change your phrasing so that it reads, "any condition of the work contract binding the workman not to join *or to join* an independent (standard) labor union is to be deprecated."

Gladys L. Palmer.[10] I should like to quote from the history of the Full Fashioned Hosiery Workers' Union, with which Mr. Edelman is connected and in which I have conducted some research. Fifteen years ago they had production standards in practically every mill in Philadelphia; that is, they restricted output in a given week in an effort to save work on the old "lump of work" theory.

Now they jointly hire engineers to set up production standards so that they may give a fair day's work under their wage scale. Not only do they accept the necessity for production standards and the responsibility for securing them but they have gone in for an extensive program of waste elimination. During the past six years the union has in all its meetings, shop, local and national, preached the doctrine of waste elimination on every score and has not supported workers discharged for bad work or damage to their machinery when they have attempted to be reinstated. Throughout its history the union has assumed that the workers were craftsmen and that they must accept responsibility for doing a good job. As their union has progressed, they have enlarged upon that concept until it actually does mean an assumption of responsibility for production standards, quality workmanship, and the economic welfare of the industry in which they work.

Mr. Edelman. May I just add for the record, and not as a representative of the hosiery workers' organization, that, no matter what protective professions certain labor leaders may have made concerning their refusal to accept responsibility for difficulties of industries over which they have had practically no control, the fact remains that no alert member of a labor union today fails to be aware that labor must not only accept, but militantly seek, a share in problems of management. If this is not done both industry and labor will presently be seriously handicapped, and these problems will no longer be subject to an orderly solution.

I should like also to make one other suggestion. Little attention seems to have been given in the Code to the possibility of setting up arbitration machinery. Such an agreement between management and employes, where organization exists, certainly is most helpful from the standpoint of efficiency.

Mr. Cooke. A great deal has been said here about the individual's right to do as he pleases about union membership. I want to emphasize the fact that our whole thought has been to recognize group organization because of the protection it gives the individual in his weak position. I am not sure that we have struck twelve in our phrasing. There have been lengthy discussions by the Committee on the subject and numerous suggestions have been received. Mrs. Kelley suggests that Dean Pound's and Mr. Frankfurter's opinions might prove valuable and Mr. Edelman calls attention to the somewhat more positive statement of the Federated Council of Churches. If any of you have further suggestions we want to have them.

---

[9] Secretary, The Metal Manufacturers' Association, Philadelphia, Pa.

[10] Research Associate, Industrial Research Department, University of Pennsylvania, Philadelphia, Pa.

Mildred Fairchild.[11] Mr. Young's remarks brought to my mind a later action of the Supreme Court, in May, 1930, I believe, in the Texas and New Orleans Railroad case. In that case the Supreme Court for the first time required that the railroad company deal with the recognized trade union rather than their company union, under the federal act requiring mediation between carriers and employes through their recognized agents.

Mr. Young. I should like to reply first to the last speaker. The Supreme Court has made many mistakes, but it did not make the mistake of requiring, under a federal act, the unions to deal with the railway or the railway to deal with a particular union. What happened in the New Orleans case was that the Court decided, since the law guaranteed the employes the right to choose their own representative, they must not be interfered with by the employer. The law does not require the railways to deal with any particular union and this—if I may refer to my refrain after each verse—is exactly what I am pleading for here. You should have greater elasticity in your Code.

Why should the Taylor Society place in its Code a deprecation of the one thing without mentioning the other which Mr. Sparks has called to your attention (closed-shop contracts)? We are working for the freedom of the worker. We desire to stimulate initiative, the craftsmanship instinct. How can he have interest and initiative if he is not free?

I want to return also to the phrase "with clear responsibility for the accepted objectives of the business." This covers a whole lot of things that the workers do not assume responsibility for. And Mr. Cooke has mentioned several instances in which successful appeal has been made to the union for co-operation in essential matters of management. It is not necessary to have a dictionary in order to point out that there is a difference between cooperation and "clear responsibility."

Ordway Tead.[12] In my opinion, though I am not on the Committee, Professor Young seems to have misunderstood what the Committee was trying to do. It was not seeking so definitely as he assumes to establish and protect the *individual* relation of the workman to industry. I should say quite the opposite. It was seeking to establish for the workers a basis for *collective* or *group* activity that would enable them, by virtue of the protection which organization gives, to feel free to co-operate and to participate in the fulfillment of the objectives of industry. It was seeking to establish the truth that only in collective dealings can there come that equality of negotiative power, which is the necessary prerequisite of full co-operation.

Two suggestions have occurred to me. One is almost grammatical. The word "joint" is one that I am rather fond of. In Section II, I should like to see it put in to modify the word "objective" and also to have that word changed to "objectives." I am a pluralist! This is the way I personally, in the interest of greatest explicitness and philosophical accuracy, should like to see the phrase appear: "for the attainment of jointly agreed objectives." My philosophical point is that the objectives are only going to be valid when they are jointly agreed to.

Similarly at the end of Paragraph 1 in Section IV, I should like to see the statement made explicit, as I am sure it was implicit in the Committee's thought, by the addition, at the end of the italicized matter, of such a phrase as, "which is safely carried out only as it is a joint enterprise between labor and management."

Alice S. Cheyney.[13] As I listened to this discussion it occurred to me that all the major points advanced before the International Labor meeting of the League of Nations in 1927 have been advanced here. If anyone thinks it is going to be easy to formulate a statement which will allow people to join trade unions and at the same time satisfy those who want to protect them from the closed shop, he should read the record of those discussions of employers, workers and government representatives over a period of three weeks four years ago. They were left stranded in trying to define the right to organize. This was one of the three proposals for international agreement that in the whole period of ten years has been tabled, and it is on the table still.

---

[11] Assistant Professor, Social Economy, Bryn Mawr College, Bryn Mawr, Pa.

[12] Business Book Editor, Harper & Brothers, New York, N. Y.

[13] Washington Branch, International Labor Office, Washington, D. C.

H. V. R. Scheel.[14] As I worked on the Code Committee it seemed to me that quantitative and qualitative, as well as ethical, standards of measuring management should receive some consideration. Thinking about it developed in my mind that sort of pernicious, stubborn activity that sometimes keeps us awake. I am sleeping now because ideas have been reduced to writing and diagrams. These are an amplification of the theory I presented when the Code was discussed at the December meeting of the Society (BULLETIN OF THE TAYLOR SOCIETY, Vol. XVI, No. 1, February, 1931, p. 28). I have called this amplification "An Outline of the Life History of an Imaginary Concern with the Effectiveness of Its Management Measured from the Social Viewpoint, Period by Period, by Means of Measuring Index Figures."[15]

I compare industry's social function to the wheels of a wagon. The smoothness with which the wagon rides depends on the roundness of its wheels. If in the three-spoke wheels (Investor, Worker, Consumer), one spoke is larger than the others, the riding cannot be as smooth as it should be. If all the wheels on society's wagon are lopsided, it is shaken in all its members. When, as at the present time, Investor and Worker have no spokes, the wheel does not turn at all and its sledgelike dragging slows up the wagon.

---

[14] Vice-President, Botany Consolidated Mills, Inc., Passaic, N. J.

[15] Limitations of space prevent the publication of this paper in this issue of the *Bulletin*. Until such time as it is possible to publish it in the *Bulletin*, it is available for consultation in the Taylor Society office, which also has a limited number of copies for distribution.

STEADY wages, ample for a respectable standard of living, are an element of social justice, and as such are or should be a satisfaction in themselves. They permit the family to control its own activities and circumstances to a great degree. The provision for responsible living and the free acceptance of it constitute an indispensable preparation for the acquirement of other values. . . .

Sickness and old age are legitimate fields for insurance in the true sense of the word, and the wage provided and the service rendered by public or private organizations should take care of these factors.

Steady work in itself is more of a satisfaction than most people would believe who have never tried it. And this is true even when that work would appear to an onlooker to be monotonous and uninspiring. The satisfactions of function and of objective achievement are real, effective and widespread.

Much can be done to make work more interesting and absorbing, but the most neglected opportunities are to be found in our leisure; and if leisure is to be increased we can neglect it no longer. For, as with wealth, an increased leisure will not automatically bring increased satisfaction. . . . .

The requirements are elastic, for one thing. The productivity of our machines can be directed toward little leisure and much goods, or toward more leisure and less goods. The determination is not one of mathematical calculation, but of balancing human desires and satisfactions. It is highly probable, however, that nothing that would properly be contemplated would interfere with our present progress toward a five day week. At the same time it is sure that this might ultimately be reduced to four days or even less, if we can simplify our tastes along with the progress of efficiency in production and distribution. . . . . (Ralph E. Flanders, *Taming Our Machines,* pp. 210-211.)

Planning in a Particular Industry[1]

Possibilities of Stabilization Through Balancing Production With Demand

By WALKER D. HINES
Director, Cotton Textile Institute, New York

MY TALK will be confined to planning for a particular industry in order to avoid overproduction. I will speak in general terms but the background of my remarks will be the cotton-textile industry with which I have been identified for the last four years. The suggestions will, I believe, be applicable to a variety of industries.

The fact that there is serious overproduction in many industries is well understood today. It sometimes manifests itself in excessive stocks but more often in an over-reaching of selling effort to avoid these stocks. This results in demoralized prices which are often below actual costs.

I suppose no one will deny that it is injurious to the stockholders of a manufacturing concern to have its profits destroyed and its plant used at less than cost during a large part of the time.

There is another phase of price demoralization that is, I believe, not fully understood and that is an injury to customers. In order to make that statement more concrete I want to point out who the customers are in the cotton-textile industry. We first have a very active body of business men who buy up cotton goods and decide how they shall be bleached, or printed or dyed for the trade. They depend on being able to buy these goods and to dispose of them at a profit. They cannot do this unless they can get a price greater than what they paid for the goods. And they cannot get this price if the price of grey goods, or unfinished goods, is constantly decreasing. The middleman is always hampered if the price of the material he buys and deals in is going down.

The same thing is true of the wholesaler. If he buys his goods at a certain price, and his competitor later buys at a lower price, he is placed at a disadvantage.

The same is true of the retailer. All these different subdivisions of customers are at a great disadvantage if there is sufficient overproduction to demoralize prices and keep them in a declining state. There is nothing the customer is more anxious to get than stability in prices, an impossibility in a state of chronic overproduction. We have had a striking illustration of this in the cotton-textile industry. The most persistent objectors to overproduction have been the customers. You might think it would be the other way around, that the customer would want the lower prices brought about by overproduction. On the contrary, he dreads it because it takes the profit out of his own business. It makes him hesitate to buy for fear the next buyer will get a lower price. The customers have besought the industry to stop its overproduction.

From the standpoint of all classes of customers, it is a great and persistent injury to have a state of overproduction which creates hesitancy in business and prevents free and confident trading.

Another class badly hurt by this state of affairs is the mill employes. They suffer because overproduction means spasmodic employment. Some assume that overproduction means more employment for labor. The fact is, however, that you cannot keep it up because it eventually leads to such destructive prices that whole industries or units of industries have to drop out. In the long run the total employment will be no greater with overproduction that is disorderly than with balanced production that is orderly. It is impossible for an industry to keep on indefinitely producing in excess of the demand. It must stop sometime, and when it does labor stops. The difference, as far as labor is concerned, between an overproduced industry and one in balance with demand is that employment is of a more orderly and dependable nature in the latter.

Furthermore, producers of raw materials are not benefited by overproduction. I can speak here with reference to raw cotton, the raw material of the cotton mills. Again you might assume that overproduction would be good for the grower because it would mean more sales. But the fact remains that you cannot indefinitely spin and weave into cloth more cotton than the demand will take. You eventually run into curtailed operations which result in less consumption of raw cotton than there would have been had production proceeded in an orderly way. One more speculative element has entered into the highly speculative business of dealing in raw cotton.

---

[1] Paper presented before a meeting of the Taylor Society, Philadelphia, Pa., April 30, 1931.

I wish to emphasize the probabilities that production and employment will be greater with a balanced condition than with a condition of frequent overproduction. In the latter case the distributing trade is upset by doubts and fears, and in the long run buys actually less goods than when conditions are stable. When a distributor, through fear that the market will decline, fails to buy goods, he is likely to go through frequent phases of not pressing goods on his customers. The result is less sustained pressure to dispose of goods than if the distributor is all the time pressing his organization to find extended uses for the goods that he is regularly buying. I believe, therefore, that a stable condition of balanced production actually enlarges the demand for the raw material and for labor to make the product which is being manufactured.

All along the line, therefore, we find overproduction injurious to stockholders, customers, employes. We may encounter the argument that public policy is concerned with none of these but only with the ultimate consumer; that if he can get goods below cost, so much the better. But I deny that this is a sound test. Public policy must take into consideration all the groups which make up the public. Nor is it possible to separate the groups. In order to be a consumer a man must have earnings, and to have earnings he must, generally speaking, derive an income due directly or indirectly to some phase of manufacturing. There is no mythical person whose only interest in the world is to spend money. The people's first interest is to make an income to spend. If this is interfered with their interest as ultimate consumers is eliminated or impaired. They have no money or less money with which to buy. The development of free and confident conditions of trade, unhampered by continuing declines in prices because production and demand are not kept in balance, is in my opinion a real concern of public policy.

When we come to working out a balance between production and demand it is evident that industry needs to keep itself informed of its condition. For that purpose it needs statistics, which in my opinion are one of the basic elements of industrial planning. I refer to statistics within an industry. Of course the broader statistics to which Mr. McFall referred are of the greatest importance, but I am undertaking to put up to you the problem of a single industry only. I think there is now very general acceptance of the need for these statistics. Of course, there are some objectors who will not furnish them but the number is diminishing. The cotton-textile industry is well aware of the fact that these statistics are indispensable if it is to avoid a chronic state of overproduction.

When we come to the actual balancing of production and demand we encounter objections. I will not take your time to discuss or even mention all of them. An important one is that our grandfathers got along without it and therefore we can also. This argument neglects the fact that there have been changes in the world since the time of our grandfathers. A couple of generations ago demand was increasing in this country at a rate to keep pace with, or ahead of, production. What was good enough for our grandfathers is clearly not good enough for us if we are to do as well as they did.

Another group insists that they will not change their production plans because they cannot depend on others to do the same. I believe, however, that we are getting rid of both these classes of objectors.

There is, however, another type that is much more dangerous. This is the manufacturer who believes production should be kept in relation to demand but that others will do the job while he capitalizes their self-restraint. To my mind these manufacturers are the most serious obstacle in the way of balancing production with demand. It puts a terrific test on those manufacturers who wish to conduct their businesses in conformity with economic principles to see their self-sacrifice made the means of undue profit by a small number of selfish non-co-operators. Nevertheless, I believe an increasing number are performing along sound lines and that persistent educational work and discussion will still further increase the number.

There is one very insidious form of overproduction of which I have seen examples. Some manufacturers tell their workers that wages must be cut, but that this will be made up for by increased work. Of course, if an industry as a whole does this it accentuates overproduction and eventually and quickly cuts out work. This does a double injury to workers. It misleads them and gives them irregular work. Indeed, in addition it so reduces prices as to provide excuses for still further reductions in wages. The only reason a few can get by with this policy is that the majority do the sensible thing and try to keep production down. I believe education will gradually eliminate this bad influence in industry.

There is one thing of importance in the cotton-textile industry which I wish to mention briefly. During the War night work, which had been employed to a considerable extent before, came to be a very general feature of the industry. The situation took care of itself while the War lasted because of the unusual demands, but as soon as it ended overproduction was greatly accentuated by night work. By degrees it has dawned on the industry that this condition promises to be destructive and that the only sound method of operation is on a day-shift basis. There has been a very definite movement in this direction and it is still making progress. It deserves the example and support of all because it is at present the most important single element in keeping production in balance with demand.

I want to speak for a few minutes on the legal aspects of this question. Mr. Thompson has mentioned the anti-trust laws, as I shall do. But we are not speaking on the same phases of the laws. He has in mind particularly combinations and mergers of industrial units, especially those mergers which eliminate competition. I have in mind co-operation among industrial units which remain separate and distinct. I think a binding agreement among separate units to keep production in balance would be in the public interest in those industries where a serious overcapacity exists. This should be considered not as a restraint but rather as a promotion of trade.

Some confusion has existed as to the attitude of the courts and the Department of Justice has spoken of the impropriety of agreements to restrict production. But the Department must be referring to reducing production below demand. There is no question of the impropriety of this, and I do not refer to it. I refer to *balancing* production with demand. This will not create any form of restraint but will remove one. This kind of an agreement is not, in my opinion, in any way a violation of the anti-trust law. The language of the law is very general. It is for the court to determine the effect of an agreement. If the court decides that it is for the purpose of balancing production with demand and avoiding the demoralization which accompanies overproduction, it is not a violation of the Anti-Trust Act but actually promotes the purposes of the act.

Forty years ago when the Anti-Trust Act was passed conditions were entirely different from what they are now. Under those conditions restraints on production might have had a very sinister implication. Under present conditions capacity outruns normal demand. Severe limitation of exports, hand-to-mouth buying and other factors have brought about a series of fundamental changes in the relations between production and demand.

Further, there is an increasing appreciation of the inter-relationship of classes of the public and the blending of their interests in our country. Since the War there has been a realization that it is important to manufacture and distribution that agriculture and labor shall have adequate purchasing power. It is coming to be understood also that agriculture and labor need greater stabilization of manufacture and distribution. All this would justify the courts in taking a more comprehensive view as to what is really a restraint of trade.

We find that governmental expressions have for years been to the effect that industry should improve its status by relating production to demand; and that the public interest would be served by this better balance. All along the line industries have been urged to adopt forms of self-government which will protect them from demoralization. Stabilization has become the watchword of the world. It is needed to minimize fluctuations in agriculture, labor and manufacture, to restore confidence, to avert depression. It is needed in both national and international banking, and all to remove restraints on commercial intercourse.

If all those things are true, then agreements which promote stabilization and are free from injurious consequences cannot be regarded as violations of a law whose sole purpose is to prevent restraint of trade.

There has been a great deal of discussion about amendments to the Anti-Trust Act. It seems to me that it expresses a sound principle as it stands. My proposition is that the courts are not bound to assume that any trade agreement is necessarily in restraint of trade. It should be the function of the courts to examine the whole case and consider the interests of all the groups affected. The law should be enforced in accordance with present business realities and modern concepts.

Mr. Thompson made some striking comments on the difficulties involved in trying to get a body like the Federal Trade Commission to rule in advance on problems of mergers. I want to emphasize the fact that I have not at any time been referring to problems of mergers.

A Tabular Presentation of the Principles, Technique and Chronological Development of Scientific Management

By H. S. PERSON

Managing Director, Taylor Society, New York

THE table on the following pages is taken by permission from the paper by Dr. Person, "Scientific Management as a Philosophy and Technique of Progressive Industrial Stabilization," presented at the World Social Economic Congress held in Amsterdam, Holland, in August, under the auspices of the International Industrial Relations Association.

The sixty-four page paper from which it is taken was prepared as an answer to the question, "What has private industry developed in the nature of a basis for a technique of national and international planning if the latter should be proved to be desirable?"

The argument in the paper runs along three lines: (1) scientific management is a technique of stabilization of managerial situations; (2) its history is that of a compulsion, in order completely to stabilize any lesser area (e.g., production), to reach out and stabilize the influencing environment (e.g., sales); and (3) the best managed (most stabilized) private industries are now victims of an unstable economic environment, and are confronted by the necessity of stabilizing that environment through some form of collective control of industrial processes. The answer to this problem is application of scientific management on the collective plane; particularly the establishment for national industry of a research and planning unit which would work out a national budget of production matched to consumption, rendered voluntarily acceptable by the weight of controlling facts disclosed.

This paper will form part of the proceedings of the Congress to be issued in December. We are able to announce, however, that there is still available a small supply of "advance reports" printed for the use of delegates at the Congress, as follows:

Section I, The Present Paradox—Analysis of Fluctuations in Employment and Unemployment, 1910-1930, in seven countries by five economists; 8 pamphlets (one in German text with English synopsis) with charts and tables, 331 pp., $1.50.

Section II, Principles and Practicability of Economic Planning, including Dr. Person's paper, von Haan's "European Aspects of the Rationalization Movement" (German text) and Lorwin's "The Problem of Economic Planning"; 3 pamphlets, 144 pp., $1.50.

The two sections can be procured for $2.50 and this amount will be credited on any later purchase of the complete records of the six sessions of the Congress. Orders for these advance prints will be filled while the supply lasts by I.R.I., Javastraat 66, The Hague, Holland, but the orders may be sent to the office of the Vice-President (Mary van Kleeck), Room 600, 130 East 22d Street, New York.

Scientific Management in Perspective

As a Means of Achieving Progressive Stabilization

COLLECTIVE PRINCIPLES	MAJOR ITEMS OF TECHNIQUE IN INDIVIDUAL ENTERPRISE		
	1. Work-Place	2. Shop	3. Personnel
RESEARCH in Its Various Forms Is the Approach to Solution of All Problems of Management.	Engineering Studies in design of equipment. Economic studies in size and output of machines. Methods study Time study Motion study Studies in behavior of materials Studies of skill	Studies of the relations of facilities and classes of skills available at the various work-places, and of the most effective co-ordination and proportioning of them under varying conditions of the kind and quantity of orders flowing into the shop.	Studies in mental and manual aptitudes Studies in personality requirements of various jobs Studies in emotional conditions and reactions Studies of group organizations
STANDARDIZATION Provides the Basis of Understanding Necessary to Co-operative Effort, Through Formulation of Purposes, Policies, Plans, Projects, Facilities, Methods, Conditions, Etc., Which Become Constant Factors in Planning and Execution.	Specifications of Materials Machines Tools and apparatus Product Unit times Methods Jobs Conditions Wage rates Quality Quantity	Specifications covering co-ordination, proportioning and application of skills and facilities under various specified conditions of the kinds and quantities of work. Production schedules	Specifications of personality requirements for various jobs Specifications relating to hiring, promotion and discharge Specifications relating to training and sharing of information Specifications relating to personal and group relations
CONTROL Is Effected by Co-operative Observance of the "Laws" Inherent in the Situation, Discovered by Research and Made Practical by Formulation in Terms of Standards.	Provision of materials and tools Specification of jobs or operations Inspection of product Inspection of performance	Functional separation of planning and execution Classification of operations Analysis of orders Routing; the analysis of the sequence of operations on a job Scheduling or assignment of operations to various work-places in accordance with routing Inspection: products, results, costs	Systematic intelligent direction of conduct in accordance with specifications indicated above
CO-OPERATION as a Mental Attitude Is a Condition of Efficient Common Effort, and as a Mode of Conduct Is the Result of the Formulation of Standards of Purpose, Facility, Method and Relationship.	As a condition and as a result, co-operation is promoted by the combination of all factors in the total situation: understanding and acceptance of the common purpose; instruction and the understanding of details; acceptance and performance of complementary responsibilities; proper		

From "Scientific Management as a Philosophy and Technique of Progressive Industrial Stabilization," by H. S. Person, Managing Director of the Taylor Society, New York, presented at the Congress on Social Economic Planning under the auspices of the International Industrial Relations Association, Amsterdam, Holland, August 24, 1931.

The order from left to right indicates roughly: (1) chronological development; (2) application to expanding managerial areas.

MAJOR ITEMS OF TECHNIQUE IN INDIVIDUAL ENTERPRISE			COLLECTIVE ENTERPRISE
4. MARKETING	5. FINANCE	6. GEN. ADMINISTRATION	
Market analysis Quantitative Qualitative Studies of consumer demand Studies of the channels of distribution Studies in methods of selling Studies in sales promotion Studies of competition	Most of data required by this department are procured by other departments, e.g., costs Studies of market for capital Studies of customers' credits and collections Studies of prices of materials when purchasing is speculative instead of routine (e.g., cotton, rubber) Studies of financial ratios	Studies of the state and tendency of— Industry generally The particular industry The particular enterprise Industrial forecasting Studies of managerial operating ratios All researches of all departments contribute to the information required by general administration	Scientific management has not been applied to the stabilization of industry on national and international planes, although experiments pointing in that direction have been initiated. These experiments, however, are not free from simultaneous experimentation in other fields of social organization.
Specifications Sales schedules Quotas: territorial commodity and personal Channels of distribution Methods of selling Prices Discounts Salaries and commissions	Specifications Standard costs Financial ratios	Specifications of Policy Projects Plans Master schedules Master budgets Operating ratios Ratios of relationship to the industry generally	
Functional separation of planning and execution	Inspection of financial aspects of management in terms of various ratios	Inspection of: Conformity of operations to budgets and schedules Special attention to exceptional situations Prompt decisions concerning changes in purpose and policy	

selection, assignment and promotion of personnel; provision of adequate facilities; just sharing of the joint economic rewards; humane personal relations; steady provision of work to be done.

Production Planning[1]

A Case Description

By RALPH E. FLANDERS
Manager, Jones & Lamson Machine Co., Springfield, Vt.

THIS paper is primarily one asking for information rather than giving it. Perhaps this is not a common procedure; but since discussions of papers are sometimes their most valuable product, it is hoped that some useful effect of this sort may result here.

The questions to be raised relate to the production methods of the Jones and Lamson Machine Company of Springfield, Vermont, with which the writer is connected. These methods were outlined in a paper entitled "Design, Manufacture and Production Control of a Standard Machine" read before the American Society of Mechanical Engineers on December 4, 1924. In brief, this paper described: (1) the re-design of a line of turret lathes to make them as far as possible of the same component parts; (2) mounting the beds on temporary truck wheels for progression by manpower in a line assembly scheme; (3) the departmentalization of the shop by product rather than by function, bringing the progress of the work into a straight-line flow from rough stock to line assembly, and including an open stock room without stock keeper or records; (4) the devising of a "program" scheme of production control; and (5) the installing of a system of standard operative times which forms the basis of individual and departmental efficiency records.

The purposes of this scheme were: (1) to lower production costs by standardizing the product and applying some of the advantages of continuous production with line assembly to a low output; (2) to reduce the overhead expenses of routing, scheduling, stock chasing, transportation, supervision and stores keeping; and (3) to give flexibility to the production program of the various machines in the company's line to meet varied demands of the market. All of these purposes appear to have been met in a fair degree, though there has been such a variety of other changes made meanwhile that it has not been easy to segregate and value the effect of these particular ones.

Figure 1 gives a view down the hand-operated assembly line of the shop as it was originally laid out.

It is of the scheme of production control that I desire particularly to speak. There are, of course, several production schemes, of which building and assembling in lots, and ordering on maximum and minimum perpetual inventory records, are the most usual for small output, while "continuous production" is the common plan for output high enough to permit of its use. Our "program" scheme was devised and installed with the hope of getting some of the benefits of continuous production in a shop of small output. Let me describe the plan briefly.

The year is divided into standard production periods, of which we had at first four of three months each. These were later changed to six of two months each. Each piece of a standard machine is scheduled for a particular starting date in the shop, which date then recurs at two-months intervals. The shop production is governed by standing orders, good until changed, calling for so many of each general class of machine per week or per month. The particular sizes are not specified in the standing orders. By means to be described the order clerk translates this information into the proper size of lot for each given part. When the starting date is reached for a given part, the order clerk counts the number of parts in the stock bin. His orders show that for the current rate of production there should be a standard number of parts in the bin at that particular time. If there are more than the standard number, the standard lot is diminished by the amount of the excess; if there are less than the standard number, the lot is increased to meet the deficiency. The standard quantity was originally set to give a half lot in reserve when the new lot arrived in the stock room. The purpose of this half lot was to provide for spoilage, and to give a reservoir on which to draw for immediate

---

[1] Paper presented before a meeting of the Taylor Society, Philadelphia, Pa., May 1, 1931.

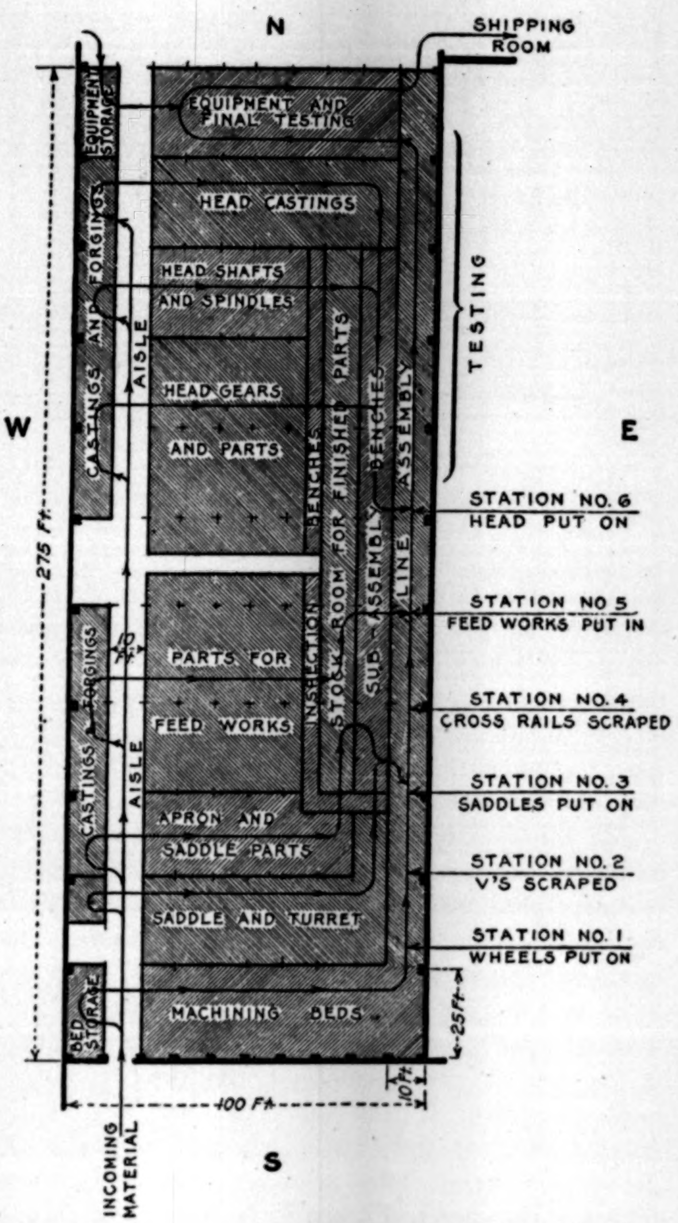


Figure 1 View Down Hand-Operated Assembly Line

increases in the assembling rate when orders increased suddenly, as sometimes happens.

Meanwhile the rough stock has been controlled on the same principle, by the ordering of enough new castings, forgings or what-not to provide a predetermined total of raw material for the standard shop order in the two-months period, and still maintain a half-lot reserve. For details of this plan the reader is referred to the original A.S.M.E. paper.

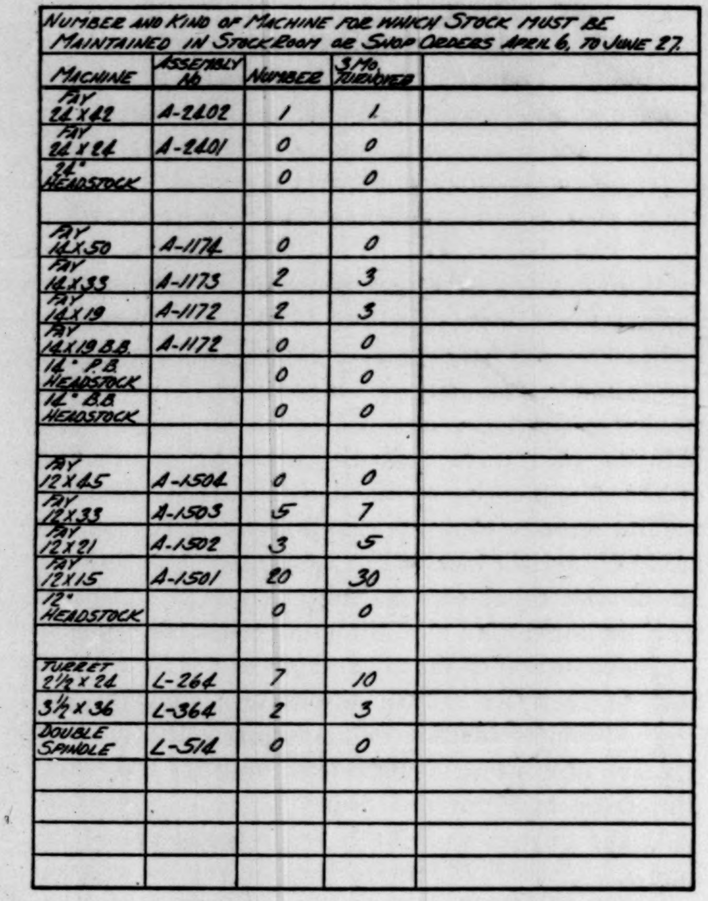
After eight years' experience, we can say that this production scheme has met almost all our expectations, particularly in doing away with a large share of a certain type of manufacturing overhead. There are practically no records to keep except for costing; there are almost no interdepartmental communications, either verbal or written; there is a minimum of transportation of materials, and a stream of parts is provided in such a way that, on the whole, assembly proceeds without undue delays.

Of the various criticisms which have been directed against the scheme the one which we have been inclined to take the most seriously is that it ties up too much money in inventory between the receiving platform and the assembly line. The half lot in reserve and the standing production orders (frequently modified, it is true) probably require more value on hand than does the lot method; and the size of lots cannot be so accurately set at the most economical production figure as with the maximum and minimum stock-bin method.

Consideration of the advantages of the lot method has, in fact, led us to elaborate somewhat our original simple method of determining the lot size. We are now using a plan depending on the forms illustrated in Figures 2, 3 and 4.

At the beginning of each two-months period the man in charge of production refers to current orders from the financial control of the company, giving the rate of output in machines desired per week. He then obtains from the management the estimate of the sales department as to actual orders, inquiries, etc., and thus makes out a schedule of the desired number of each of the various styles and sizes to make up the required orders. This schedule when made up appears as in Figure 2. This shows a rate of output of three and two-thirds Fay lathes per week or a total of thirty-three for the nine-weeks period. For the turret lathes a schedule of nine is called for, or one a week only. These figures reflect "hard times," Russian orders, a small stock of finished turret lathes and other current phenomena.

Every component part of all the machines in our line has its own card as shown in Figure 3. This is filed in the shop-order department under the starting date. When the starting date is reached the card is pulled out. The assembly numbers at the top correspond with the same numbers on the schedule in Figure 2. In the space marked "analysis of assemblies" is a list of the sub-assemblies in which the part is used. The "total per machine"



NUMBER AND KIND OF MACHINE FOR WHICH STOCK MUST BE MAINTAINED IN STOCK ROOM OR SHOP ORDERS APRIL 6, TO JUNE 27.

MACHINE	ASSEMBLY No	NUMBER	3 MO. TURNOVER	
FAY 24 X 42	A-2402	1	1	
FAY 24 X 24	A-2401	0	0	
24" HEADSTOCK		0	0	
FAY 14 X 50	A-1174	0	0	
FAY 14 X 33	A-1173	2	3	
FAY 14 X 19	A-1172	2	3	
FAY 14 X 19 B.B.	A-1172	0	0	
14" P.B. HEADSTOCK		0	0	
14" B.B. HEADSTOCK		0	0	
FAY 12 X 45	A-1504	0	0	
FAY 12 X 33	A-1503	5	7	
FAY 12 X 21	A-1502	3	5	
FAY 12 X 15	A-1501	20	30	
12" HEADSTOCK		0	0	
TURRET 2½ X 24	L-264	7	10	
3½ X 36	L-364	2	3	
DOUBLE SPINDLE	L-514	0	0	

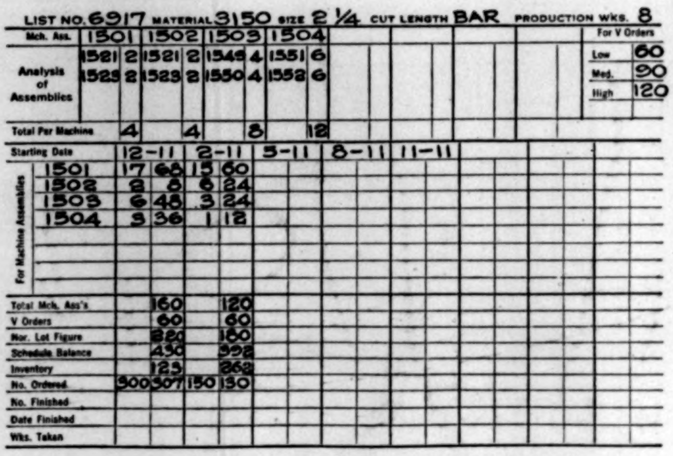
Figure 2 Assembly Schedule of Machines for Two-Months Period

for each main assembly is given below by addition.

Looking at column "2-11" we note that this production period will require sixty parts for fifteen of assembly 1501, twenty-four parts for six of assembly 1502, etc. The total for machine assemblies is given below as 120.

Meanwhile provision must be made for "V orders," which are replacements, repairs and service calls in general. In the upper right-hand corner of the card we see that in slow or "low" times about sixty per period must be provided for this category. Added to the total for machine assemblies, this gives the normal lot figure of 180 as shown.

The next step is to find what the number of parts in stock should be at this moment to take care of the desired output. For this purpose reference is made to the chart shown in Figure 4. Because this is rather long only the top part is shown—and unfortunately not the part from which the actual figures are drawn. The principle involved will be clear, however. For any given normal lot—figured as has just been explained—the nearest amount is found in the table. To this is added the reserve of one-half lot if the normal lot is thirty-six or less; if the reserve is between forty-one and fifty-four, inclusive, the reserve is a one-third lot. Above fifty-four the reserve is a one-fourth lot.



LIST NO. 6917 MATERIAL 3150 SIZE 2 ¼ CUT LENGTH BAR PRODUCTION WKS. 8

Mch. Ass.	1501		1502		1503		1504	
Analysis of Assemblies	1521 1523	2 2	1521 1523	2 2	1549 1550	4 4	1551 1552	6 6
Total Per Machine		4		4		8		12

For V Orders	
Low	60
Med.	90
High	120

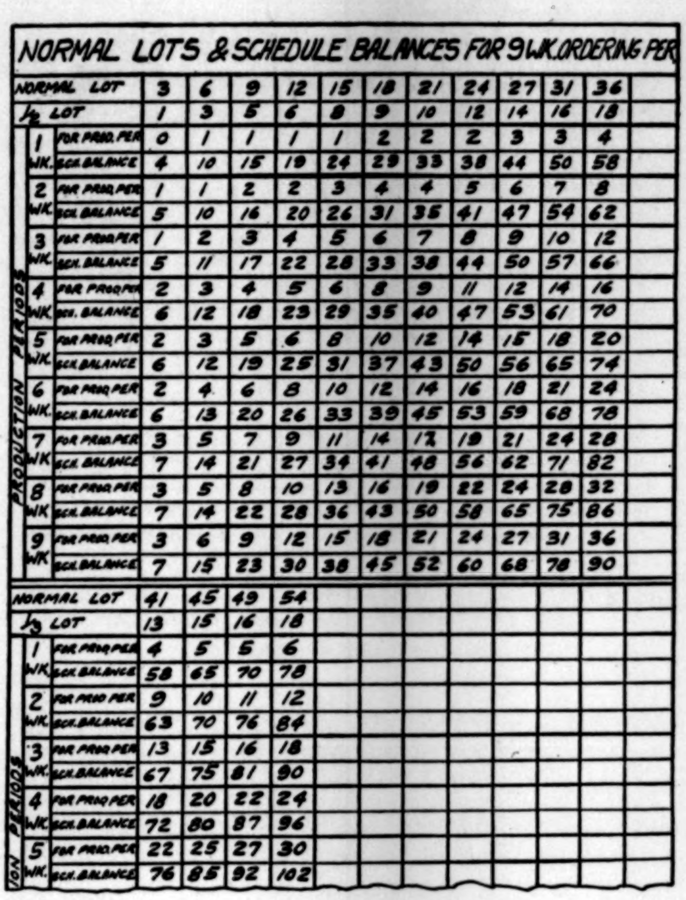
Starting Date	12-11		2-11		5-11	8-11	11-11
For Machine Assemblies 1501	17	68	15	60			
1502	2	8	6	24			
1503	6	48	3	24			
1504	3	36	1	12			
Total Mch. Ass's		160		120			
V Orders		60		60			
Nor. Lot Figure		220		180			
Schedule Balance		430		392			
Inventory		123		262			
No. Ordered	300	307	150	130			
No. Finished							
Date Finished							
Wks. Taken							

Figure 3 Order Clerk's Record Card for Individual Components

We must also know how many parts will be used up during the time the new lot is being manufactured, so as to leave the desired reserve in the bin when the new lot finally arrives there. This is shown for various production periods, from one week to nine for each normal lot size on the lines marked "for prod. per." The "schedule balance" is the sum of the normal lot, the reserve of one-half, one-third or one-fourth at the top of the column, and of the "for prod. per" opposite the production time. This schedule balance is transferred to the card in Figure 3. In this case it figures out to 392.

Now the order clerk goes to the bin and counts the actual parts therein. If there are any productive lots still in process (though there ought not to be) he adds these also to the line marked "inventory." This amount, 262, is subtracted from the schedule balance and the shop order is written for the remainder—130 in this case.

This sounds complicated, but it should be remembered that reference is made to standard charts throughout, and the only computations are the simple—and necessary—ones on the card (Figure 3). If the assembly schedule is maintained, if the demand for service parts is normal, and if the lot



NORMAL LOTS & SCHEDULE BALANCES FOR 9 WK. ORDERING PER

NORMAL LOT			3	6	9	12	15	18	21	24	27	31	36	
½ LOT			1	3	5	6	8	9	10	12	14	16	18	
PRODUCTION PERIODS	1 WK.	FOR PROD. PER	0	1	1	1	1	2	2	2	3	3	4	
		SCH. BALANCE	4	10	15	19	24	29	33	38	44	50	58	
	2 WK.	FOR PROD. PER	1	1	2	2	3	4	4	5	6	7	8	
		SCH. BALANCE	5	10	16	20	26	31	35	41	47	54	62	
	3 WK.	FOR PROD. PER	1	2	3	4	5	6	7	8	9	10	12	
		SCH. BALANCE	5	11	17	22	28	33	38	44	50	57	66	
	4 WK.	FOR PROD. PER	2	3	4	5	6	8	9	11	12	14	16	
		SCH. BALANCE	6	12	18	23	29	35	40	47	53	61	70	
	5 WK.	FOR PROD. PER	2	3	5	6	8	10	12	14	15	18	20	
		SCH. BALANCE	6	12	19	25	31	37	43	50	56	65	74	
	6 WK.	FOR PROD. PER	2	4	6	8	10	12	14	16	18	21	24	
		SCH. BALANCE	6	13	20	26	33	39	45	53	59	68	78	
	7 WK	FOR PROD. PER	3	5	7	9	11	14	17	19	21	24	28	
		SCH. BALANCE	7	14	21	27	34	41	48	56	62	71	82	
	8 WK	FOR PROD. PER	3	5	8	10	13	16	19	22	24	28	32	
		SCH. BALANCE	7	14	22	28	36	43	50	58	65	75	86	
	9 WK	FOR PROD. PER	3	6	9	12	15	18	21	24	27	31	36	
		SCH. BALANCE	7	15	23	30	38	45	52	60	68	78	90	
NORMAL LOT			41	45	49	54								
⅓ LOT			13	15	16	18								
ION PERIODS	1 WK.	FOR PROD. PER	4	5	5	6								
		SCH. BALANCE	58	65	70	78								
	2 WK.	FOR PROD. PER	9	10	11	12								
		SCH. BALANCE	63	70	76	84								
	3 WK.	FOR PROD. PER	13	15	16	18								
		SCH. BALANCE	67	75	81	90								
	4 WK.	FOR PROD. PER	18	20	22	24								
		SCH. BALANCE	72	80	87	96								
	5 WK.	FOR PROD. PER	22	25	27	30								
		SCH. BALANCE	76	85	92	102								

Figure 4 Chart for Determining Schedule Balance

goes through on scheduled time, writing the order for 130 parts will bring the stock up to a point where it will have been reduced to the desired reserve when the next succeeding lot reaches the stock bins.

This plan, it will be seen, gives some of the advantages of the lot system, in that it definitely schedules the part production to fit the demand, so far as it is known either from direct orders, lively prospects or the trend of inquiries. In fact, by a monthly revision of the schedule, it permits making corrective changes in the ordering at frequent periods. It also maintains the desired condition of carrying a suitable reserve—comparatively large for small production and comparatively small for full production—from which to replace spoilage and meet sudden demands for increased rate of assembly for certain items of the line or for the output as a whole. Finally, by making a routine of the scheduling, or a standard scheme, it reduced the production and scheduling staff to a minimum.

But how much are we paying for these advantages? Is the interest on the larger investment in inventory a high price to pay? These questions have been in our minds for some time past, and in an endeavor to arrive at a rational answer to the question the writer has looked up the available literature on the subject. The two principal contributions appear to be Major G. D. Babcock's A.S.M.E. paper of December 3, 1924, entitled "Production Control," and the paper of Professor F. E. Raymond before the S.A.E. at Cleveland in September, 1929, on "Economic Size of Production Lots." Both of these papers, particularly the latter, give elaborate mathematical analyses of lot sizes for the maximum and minimum stock-bin method. But rough calculations do not indicate that our investment would be sufficiently decreased to pay for the much greater personnel required; nor can we determine the monetary advantage we possess in our repeating schedule, in which similar parts are regularly grouped so that changes in set-up are minimized. We find ourselves, therefore, thrown back on the resource of making our own comparison, as best we can, with the lot method, the only alternative that we can properly consider.

To get some rough idea of our present performance as compared with an ideal performance by the lot method, we drew up various simplified diagrams illustrating typical cases, of which three are here shown.

Figure 5 shows on the left the variations in inventory value throughout an eight-weeks period for a large casting, delivered slowly from the foundry, and with a fairly long period required to put the lot through the shop. The relation between material and labor is such that the material is a large proportion of the finished cost. The curve for the value tied up in raw material shows the half lot in reserve as the total until the end of the third week, when the castings begin to come in as per schedule. At the end of the seventh week the material is in and inventory remains constant for one week, when it is absorbed into work in process. This quantity grows by the addition of labor and overhead as work is done upon it until it is completed at the end of the fifth week of the next period. After a week allowed for final inspection, etc., it is charged to the stock room, where its value is added to the half lot which it finds waiting there. The stock-room value diminishes with regular assembly until the sixth week of the next

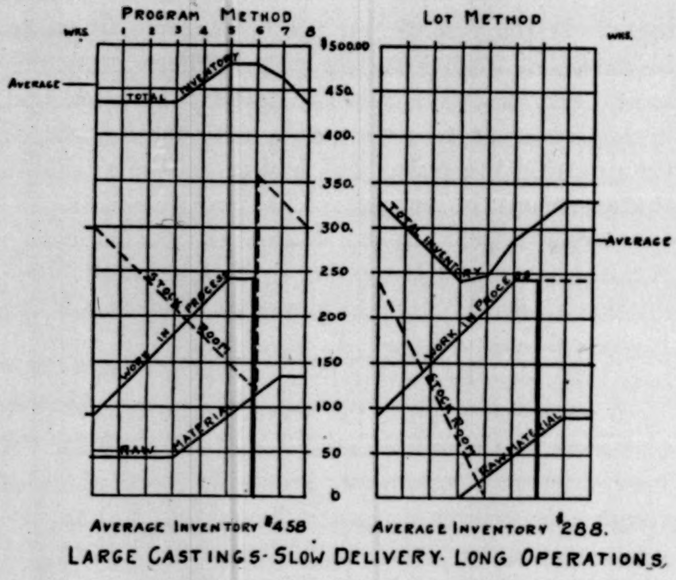


Figure 5 Comparison of Inventory Tie-Up for a Part Made From Large Casting Received in Slow Delivery and Requiring Long Operations

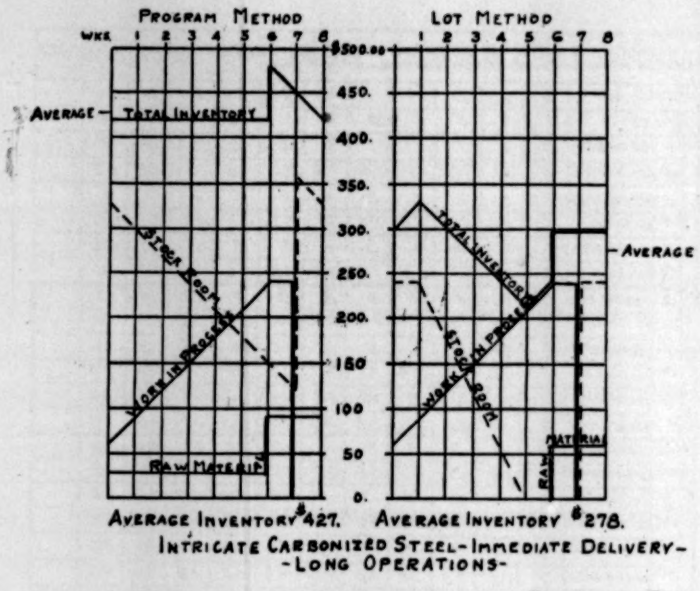


Figure 7 Inventory Comparison for an Intricate Part Made of Carbonized Steel, Immediate Stock Delivery and Long Operations

cycle, when it is again at the half lot ready for the new lot. The total inventory value is the summation of the other three curves, and the average inventory value is determined from this.

On the right-hand side is the same part and same sized lot, with the values as they would be for lot production. Since there is no half lot in reserve, the raw material curve starts from zero. The work in process curve is identical. Endeavoring to forecast conditions under lot manufacture, it would appear that there must be some waiting time before assembly commences, as it cannot be expected that all parts for a lot of machines will be furnished at the same time. Two weeks of waiting for the full stock is therefore shown, ending at the eighth week. At the beginning of the next period assembly commences, and is assumed to proceed more rapidly instead of being distributed over the full period. The total inventory curve is summated as before, and the average value is found to be $288, which is about 37 per cent less than the corresponding value of $438 for the program method.

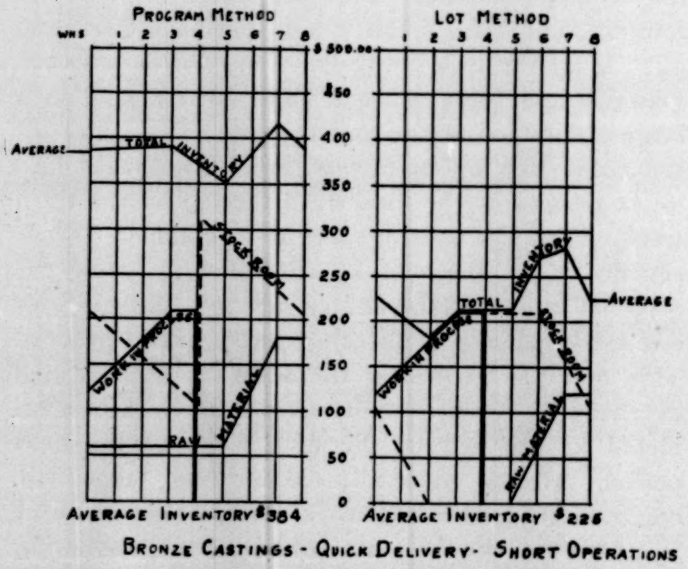


Figure 6 Inventory Comparison for a Bronze Casting with Quick Delivery and Short Operations

Figure 6 shows a similar computation for a bronze casting in which material is expensive, delivery from the foundry rapid and machining rapid. The resulting average inventories, obtained as before, give $384 for the program method and $225, or about 41 per cent less, for the lot method.

Figure 7 shows the conditions for an intricate carbonized part made from an inexpensive steel which can be obtained at short notice in one shipment from a warehouse. The average inventory value of $427 for the program scheme and $278 for the lot method make the latter value about 35 per cent less.

In looking at these diagrams one might question the half lot in reserve for the raw material. This is carried solely as insurance. The idea is to have something to fall back on in case of serious spoilage, or failure in delivery through unforeseen accidents. All the uncertainty of scheduling, all the anxiety as to deliveries, etc., should cease at the shop door. Lots *must* start on time, so that the flow of work may be serene and untroubled—according to plan and without special schedules. This also plays its part in meeting a sudden order for an increased rate of assembly, but is not so essential for this as is the half-lot reserve of finished parts. If we should cut out the half-lot reserve of raw material, our average inventory values would be as follows:

Figure 5	Program method ...	$413
	Lot method	288
	Or about 30 per cent less	
Figure 6	Program method ...	$324
	Lot method	225
	Or about 31 per cent less	
Figure 7	Program method ...	$397
	Lot method	278
	Or about 30 per cent less	

The closeness of these results is, of course, a mere chance.

Now that we have these figures, what shall we do with them? There is, I believe, no question as to a comparison with the maximum and minimum stock-bin method in any case where the line is limited enough to permit the use of the program scheme. The latter will not tie up a much larger inventory; it makes standard scheduling possible with all of its reduction of management costs, and it allows a schedule which regularly groups together parts which require the same set-up. Furthermore, the equivalents of the maximum and minimum are continuously and automatically varied with the production rate.

But in comparing with the lot method the case is not so clear. We might reduce our inventory of the items listed by about 30 per cent if we were willing to go to strictly lot manufacture. For the loss of the interest on this investment we gain certain advantages. We are permitted continuous assembly with its saving in floor space and assembly inventory. We are free within limits to change the assembly orders to produce more of this machine and less of that as orders and prospects change. We carry a reserve which permits us within limits to expand the rate of assembly on short notice and without preparing for it in advance. The parts are scheduled in a continuous flow instead of in machine lots, permitting better use of equipment and the grouping together of similar parts from all assemblies to reduce set-up costs. Scheduling is, or ought to be, practically automatic and correspondingly inexpensive.

It is the ideal of the engineer, and particularly of the management engineer, to reduce his problem to a measurable basis so that alternatives can be compared mathematically rather than by an exercise of pure judgment. We have gone as far as here indicated in trying to solve this problem scientifically; but we find it beyond our power to give numerical values to most of the items listed in the preceding paragraph. Can the members of the Taylor Society offer suggestions for a problem of this kind?

Meanwhile, our fallible judgment inclines us to continue with the program method of scheduling.

A Case of Production Planning in a Medium-Sized Organization

By **MILTON C. HERRMANN**
President, Herrmann Handkerchief Company, New York

WE MANUFACTURE women's and men's handkerchiefs. Our annual output of several million dozens is sold to jobbers, chain stores and to the larger department stores.

The retail price range for single handkerchiefs is five, ten and fifteen cents for women's and from ten to twenty-five cents for men's. The boxed handkerchiefs are sold three to the box for twenty-five, thirty, thirty-five, fifty, seventy-five cents and one dollar a box.

Almost the entire volume of sales may be classified under the head of style merchandise. The element of design must be considered as well as quality and a selling price which enables our customers to realize their normal mark-up.

Our raw material is bought unbleached, and is either bleached or printed by others according to our specifications. At the time of purchase this raw material is divided into two main classes, plain and woven.

The plain cloth may be simply bleached or printed in handkerchief squares after our special patterns. The woven cloth is delivered to us in squares specially designed by us. It will be noted that all woven handkerchiefs are especially made for us. Even in the case of plain cotton and linen cloth we have found it advantageous to depart from standard stock widths. Thus all our raw material is made to our order. This necessitates looking ahead, as the time from purchase to delivery to our factory-receiving department varies from two and one-half to four and one-half months, according to type.

The time figures mentioned are taken from our experience for normal transactions and used as standards in our planning. They do not take into consideration the preparation of designs, the making up of samples by cloth mills and the holding of these samples for comparison with others. In some cases these operations spread over another six months.

Raw material of all classes is turned into what we call rough stock when it is received at the factory. This is done in accordance with an order of work determined by our needs in the subsequent processes. This first stage consists of slitting, sewing two hems in continuous lengths, cross cutting and cross sewing. The average time for these operations is two weeks in all.

From purchase to rough stock the time element therefore varies from three to five months. It must be remembered that these figures apply only to six to eight per cent of a given purchase, which is the economical delivery unit for our cloth mills.

Rough stock may be used in two ways:

1. It may be ironed, folded, ribboned and boxed for delivery without embroidery. We call this process finishing and it requires about eight days. Here, as well as in the preparation of rough stock, allowance must be made for a reasonable amount of work in process ahead of each operation.

2. The other use of rough stock is for conversion into embroidered handkerchiefs. This embroidery may be made either by hand in Porto Rico or by machine in New Jersey. The time we must allow for hand embroidery is three and one-half months; for machine embroidery one month. To these periods must be added the eight days for finishing mentioned before. Hence, from start to finish on an embroidered handkerchief we must allow from six and one-half to eight and one-half months on hand embroidery and from four to six months on machine work.

It will clarify the subsequent part of this paper to explain here that a rough-stock style number is carried only through the stitching operation. At this stage the stock is available for plain finishing, hand embroidery or machine embroidery. The style number then assigned to it depends on the particular steps of manufacture that are to follow and is assigned in accordance with a mnemonic classification which automatically places it in known classes.

It is our policy to run our plant the year round at as even a level as possible. We therefore endeavor to plan our sales and production programs to bring about this result.

All the major details of planning are carried on at our New York office with the aid of a series of records which will be described. Our factory at Lebanon, Pennsylvania, carries out the details on instruction from the New York office and through information from another series of nonconflicting records. Most of these records are an evolution from those installed many years ago, at a time when this plant was operating under orthodox Taylor-system conditions. Standards then arrived at as to accounting, manufacturing methods, appliances and time study remain in active and useful operation today.

The record which controls purchase of raw material and provides sufficient work through the rough-stock stages is called our general account. It is divided into sections for each main class of raw material and shows the situation at the following stages: (1) purchase, (2) delivery to bleachery, (3) delivery from bleachery, (4) cutting, (5) stitching.

Cumulative totals are carried for each stage and subtractions from the preceding stage show the condition of the particular picture being studied. Entries are made when appropriate from: (1) purchase contracts, (2) cloth bills, (3) cutting reports, (4) stitching reports. This work is made a simple routine through use of the mnemonic classifications worked out at the time of the installation of the Taylor system. A report from this record is rendered weekly and is inspected and discussed by the entire executive organization. We are thus constantly aware of our raw-material situation for months ahead and can operate so as to keep a constant flow of work, if sales and financial conditions permit. For the two latter fields we have two series of records which supply all the necessary information. The financial record consists of a daily account of: (1) cash, (2) bills receivable, (3) accounts payable, (4) notes payable, (5) total sales, (6) shipments, (7) cloth commitments, and an analysis of all expenditures which, combined with the daily record, enables us to prepare budgets whenever necessary. Our sales analysis consists of a record of each completed style number sold or listed for future potential sale with a chain store. Whenever a definite order is entered, the delivery-due date is specified. These entries are constantly inspected and originate the manufacturing orders to our mill. An automatic order of work is thus created from the rough-stock stage on to the finished goods and from the raw-material stage back to rough stock.

The reversion to the rough-stock order of work is carried by an analysis of rough-stock requirements in what we call our stitching book. Herein are posted: (1) requirements, (2) manufacturing orders placed, (3) an index of finished numbers for which rough stock is used, (4) amount cut, (5) amount stitched. When the requirements for rough stock are more than our manufacturing orders for it, orders are placed to cover. At times, especially at the beginning of the season, our rough-stock orders are far in excess of needs. This is really a way of keeping the plant going until sales tendencies of complete numbers are developed. The stitching order of work is controlled at our plant in accordance with due dates of finished styles for which rough stock is not available.

The general situation with reference to handkerchiefs embroidered in Porto Rico is reflected by a simple record, the basis of a weekly report which shows: (1) total cloth requirements, (2) shipments of cloth to Porto Rico, (3) returns from Porto Rico. This is a series of cumulative totals and the position of each stage is revealed by subtraction from the preceding stage.

These are the principal records we use to guide planning operations. In connection with them we have the usual credits and debits of stock shipment. As these reflect performance rather than influence planning they are of no interest here.

Our mill has for its internal planning an analysis of sales somewhat similar to that described above. An analysis of cloth for embroidery needs is co-ordinated with the analysis of sales to take care of the delivery-time element of the completed article.

The two records form the basis of our routing system, which is adequate for the disposition of the product through the plant.

Joint Discussion

B. A. Beavan.[2] I should like to ask Mr. Herrmann a few questions. First, how much does he depend on records of past sales as a guide in determining new styles; second, how much of his product is stable; third, whether or not his raw material is always the same; and fourth, what his rate of turnover of inventory is. We should appreciate it very much if Mr. Flanders also would give us this latter figure.

I am wondering, too, since lathes are bulky articles, what consideration Mr. Flanders gives to cost of set-up as against the number of pieces to be manufactured. For example, if the cost of set-up is $50 on an operation worth $50 would Mr. Flanders run off more of that piece than the program required or allow the one job to absorb all the set-up cost? Variants of this problem come up now and then.

C. C. Balderston.[3] I should like to ask Mr. Flanders whether in his opinion the control of detailed planning should be completely functionalized or left to the foreman or department head? This question is prompted by a study which Mr. Brecht of the Wharton School has just completed. He has made a rather detailed investigation of seventy-five manufacturing companies and finds that at the present time their production control is on two levels, general planning on one and detailed on another. In nearly all of these companies general planning is functionalized but detailed planning is left to foremen. The study gives no evidence as to whether there is a tendency away from complete functionalization and, therefore, I should like to ask Mr. Flanders whether, in his opinion, detailed planning is likely to be left to foremen or whether concerns will gradually come around to complete functional control over detailed routing, scheduling, issuing of tools, etc. Is the pendulum swinging back, as it did in personnel management, to the idea that there is a limit to the expediency of functionalization and that it will be more effective to work through, rather than around, the foreman?

---

[2] Planning Manager, S.K.F. Industries, Inc., New York, N. Y.

[3] Assistant Professor of Industry, University of Pennsylvania, Philadelphia, Pa.

Allan H. Mogensen.[4] I think that complete functionalization was made necessary by the type of foremen we used to have. That state of affairs is changing and we are beginning to get a new type—the foreman-manager. In talking to foremen this last year I have noticed an increasing interest in the things formerly left to management. As we further develop and train foremen we can let them handle some of the things that caused difficulties under the completely functionalized system. As Dean Kimball stated about a year ago, in the future the foreman who cannot make use of such aids to management as economic lot-size determination will not be able to hold his job.

In the field of motion study we are finding unusual co-operation on the part of foremen. After attending classes in fundamentals of motion economy they are going back to their departments and teaching their men these principles. They appreciate as well as do the workers how much easier it is to teach an operation when the right way of doing it is known.

While they may not do as perfect a job as could the technician, the benefits of interest, co-operation and understanding far offset these disadvantages.

B. Eugenie Lies.[5] From Mr. Herrmann's paper I could not determine whether his organization makes its products for stock or whether they manufacture only to special order. I got the impression that they manufacture at least some items for stock. If this is the case, what is his method of prognosticating future style trends?

Mr. Flanders. In answering the question about inventory I would say that we first began to question our scheme of production planning when the Robert Morris Associates, to whom a group of machine-tool builders send their figures for combined ratio values in the industry, reported that our turnover was slower than that of the trade as a whole. Ours is a little worse than three times a year while for the industry as a whole it is about four times. This led to the questions I raised in my paper.

As to set-up costs, there are really three types of pieces that go into our machines. There are the major castings, the general run of small parts and the automatic screw-machine work. The major castings are run through, in practically continuous manufacture, various planers, boring mills, etc. Changes on these machines are made frequently so as to bring the parts to the assembly line in the right order, but set-up time is decreased by the use of fixtures. It is entirely a matter of providing tools and setting gauges to get these parts to run through continuously with the required changes rather than in lots. There are usually more pieces to the lot on the automatic screw-machine jobs, and this largely takes care of the problem in this class of work. If necessary we run the machines on lots for two or more periods, as long runs are essential to economic production here. On the middle class, which makes up the great bulk of the work, the advantages of running on program are two, both of which I mentioned. First, the expense of routing and scheduling is greatly reduced, and second, all similar parts are scheduled together, greatly reducing set-up time.

As to the question on detailed planning, in general we run our shop on a compromise between line authority and completely functionalized control. We have our general plan, which is repeated every two months. The original routing under this plan is done by a functionalized man who spends all his time on it. It is done in consultation with the foremen, but this man is the responsible person.

The actual scheduling of the different operations to different machines is a little more informal. Originally a sort of dispatch book was worked up in which every operation was scheduled to a given machine. Our real purpose in working it up was simply to assure ourselves that the schedule was possible; we do not insist that everything take place exactly as stated. The foreman has this book as a standard and knows the dates on which given operations should start and finish. Within those limits, as men are out or machines repaired, he may shift his schedule. We have tried to make a routine of everything possible and do not repeat routing and scheduling operations which can be reduced to a routine.

We have not been particularly conversant with management trends, so that I cannot say what the general tendency is.

---

[4] Assistant Editor, *Factory and Industrial Management*, McGraw-Hill Publishing Company, New York, N. Y.

[5] Planning Councilor, R. H. Macy & Co., Inc., New York, N. Y.

Mr. Herrmann. We have no records which are worth anything as a guide to changing styles from season to season. That is a matter of taste on which there can be no bookkeeping. As far as general classes are concerned old records are helpful. We know that we have sold so many of a large general class in the past; that if we are successful in working up new designs we shall probably sell about the same number in that class in the future. Our product is not stable and the raw materials change with the market. We turn our inventory over from four to five times a year. We have come to the conclusion that a small inventory may be an expensive fetish. We probably have a low turnover because we wish to have flexibility in raw materials and to be able to operate more quickly toward the finished article as the season progresses.

Answering Miss Lies' question, we finish our stuff for stock but are guided by orders received. We plan the first steps—purchase of raw material and preliminary designing — on the basis of past experience and then proceed to develop a series of patterns within each general class of goods. The results of the preliminary sales on these patterns are our guide for final manufacture. We do not go in for the extremes in style because our manufacturing time is too long to take on this uncertain factor. So far we have been fairly successful in following this procedure.

The Motion-Picture Camera and Clock[1]

For Recording Time and Method

By J. A. PIACITELLI
Consulting Industrial Engineer, New York

THE procedure involved in the analysis of any operation may be divided into such major steps as: (1) the recording of facts; (2) the analysis of them; (3) the setting of a standard of performance.

The subject of our discussion today, that of time-measuring devices, keeps us well within the first step. I shall, therefore, confine my remarks to the recording of facts by means of a motion-picture camera and clock, and illustrate briefly how the data are later put into graphical form for analysis.

Before taking a film for the purpose of making a necessary record of the time and method involved in an operation it is important for the observer to do certain preparatory work of planning in order that his time, as well as the time of the workers, may be most effectively utilized. This preliminary work is an essential part of the entire procedure in the recording of facts. Before discussing the time-measuring aspect of the work, therefore, I want to mention some of the most important factors which need to be taken into consideration before the recording is done.

It is well for the analyst to make a brief survey of the job to be studied, especially if more than one worker is to be observed, in order that he may establish the number of scenes to be taken and the best point of view for each. As a second step the observer should decide on the number of cycles that will be necessary to make an adequate analysis of each operation. These considerations will enable the observer to plan the entire filming job for thoroughness in the collection of data and economy in time and film.

It is sometimes necessary to sacrifice the most desirable point of view from the standpoint of method, to avoid glares and other undesirable lighting effects that would interfere with the making of proper exposures.

In the early days of motion study the camera used was of the large type, equipped with f3.5 lens and designed for standard-sized film. The lens of this camera was not as fast as that used in our modern camera and it was often necessary to use artificial lighting in order that reasonably good photographs of indoor activities of the worker could be made. With the smaller camera now on the market, designed for using sixteen millimeter film and equipped with f1.9 lens, three and one-half times as fast as that used in the older type of camera, it is now possible to take many indoor photographs without the aid of artificial lighting.

Before discussing the characteristics and use of the clock, I want to mention the fact that in a very few cases its use can be avoided altogether by exposing the film at a rate of two turns of the crank per second. The time for the various elements of motion can then be calculated on the basis of the number of frames, of one-sixteenth of a second each, in which the element under consideration appears. Generally, however, a clock is used, enabling the observer to expose at any desired speed, according to the amount of lighting or speed of the worker. It is not uncommon to take photographs at speeds lower than sixteen frames per second whenever necessary, either with the aim of economizing on film or of increasing the length of the exposure to avoid the use of artificial lighting, if the speed of the operator permits it. On the other hand, it is often desirable to make exposures at a rate higher than sixteen frames per second for the purpose of slowing down the fast movements. In these cases it is very important that the clock be placed in the field of the camera in order that an accurate time record may be made.

---

[1] Paper presented before a meeting of the Taylor Society, New York, December 4, 1930. Mr. Piacitelli also gave a practical demonstration of the method of reading the film.

Some of the early clocks used were made under the supervision of Frank B. Gilbreth and consisted largely of parts from the common clock in everyday use with a dial graduated into one hundred divisions and a hand turning at a rate of twenty revolutions per minute. These spring driven clocks are usually accurate for a period of ten to fifteen minutes and then begin to slow down.

An electrical clock has been developed recently which is exceedingly accurate because its motive power consists of a small synchronous motor, operating on a frequency of sixty cycles. Its dial is also graduated into one hundred divisions and its mechanism operates three hands. One of these makes twenty revolutions per minute, the second makes two, and the third makes two-tenths of a revolution. In spite of its accuracy this clock has some undesirable features in that it is necessary to have an attached cord to connect it with the electric current. Also, it will run only when supplied with current for which it is designed. The older spring motor driven model, although not accurate for a period longer than ten or fifteen minutes, has an advantage over the electric clock in that its use is not limited to the kind of current available. However, this is a relatively minor problem and no difficulty need to be experienced in selecting a clock if the conditions under which it is to operate are considered beforehand.

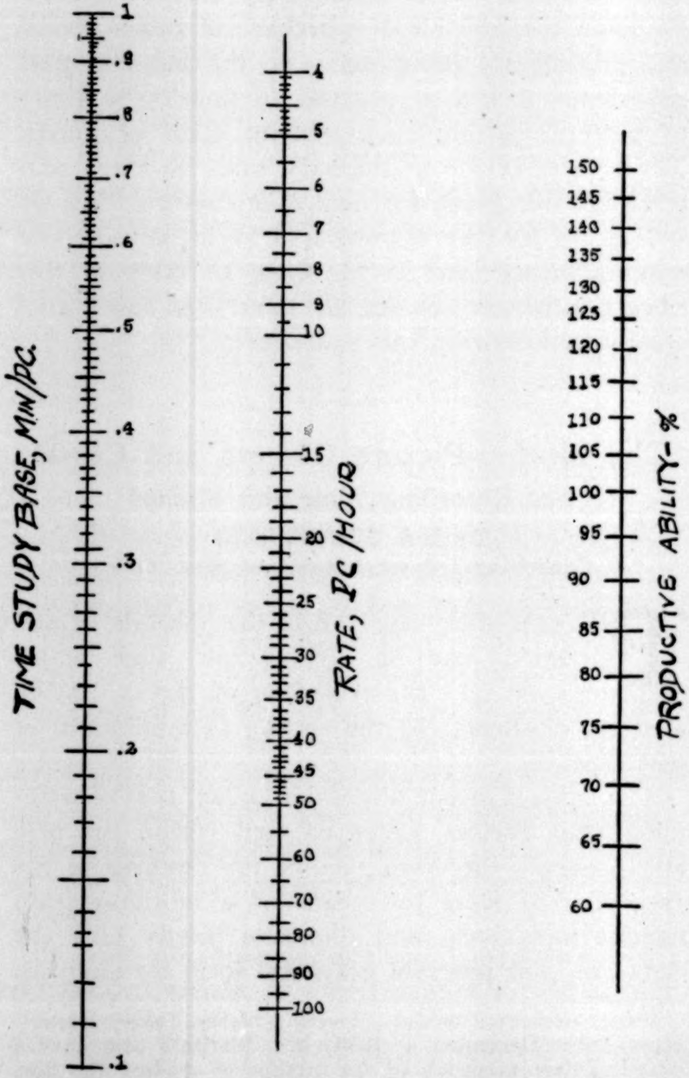
When the film is returned by the manufacturer who develops and reverses it into a positive, the data are transferred from the film to what is commonly known as a Simo chart for the purpose of making a visual record of the complete cycle. This chart shows various elements in the cycle as they occur, simultaneously for each hand, and the amount of time required to perform each in units of one two-thousandth of a minute, together with a brief description of these elements. The elements are usually indicated by symbols, thus avoiding the use of coloring or cross hatching. For working purposes these are entirely satisfactory in making an effective analysis.

A Time Study Chart

By E. K. STERNE

Grigsby-Grunow Company, Chicago, Ill.

THE purpose of this chart is to aid the time-study man in figuring the final result on studies. It can also be used in the shop for approximating rates during preliminary observations. To use the chart, the base synthetic time



must be figured and the allowances added to it. This gives the time base. From this figure on the chart a straight line drawn through the productive ability gives rate in pieces per hour. It will be noticed that these lines are divided logarithmically, and so are of unlimited range. If the figure for the time-study base of the particular study does not appear on the chart, some multiple of ten of the figure does appear. For instance, the time study base is .023: this figure does not appear on the chart, but .23 does appear. Therefore, you must multiply your figure by ten to correspond with the chart. This will necessitate multiplying the result obtained by the same figure. Care must be taken in reading the result, as you will notice that the outside scales progress upward while the center progresses downward; that is, on the time-study base scale .25 is *above* the .2 while the rate of 25 pieces per hour is *below* 20. This must always be kept in mind when reading your results.

I have been asking my friends to use this chart and let me know the results. My thought was that the members of the Taylor Society might find it of some use if it were presented to them in the BULLETIN.

Taylor Society Guest Heads New Scotch School

PROFESSOR James A. Bowie who was our guest and an able speaker at the Taylor Society dinner in Philadelphia, has recently taken up his duties as principal of the New School of Economics and Commerce at Dundee, Scotland.

The school is designed to promote, both by teaching and research, the study of all problems bearing directly on the conduct of modern business. Courses of instruction are of university grade and it is hoped that the School may become a new Scotch center of economic and industrial study and research. It is hoped also that it may become a center of higher commercial interests for a larger constituency than its immediate students and has provided in its equipment meeting space for those interested in commercial affairs. The School further aims to show the practical applications of economic principles in such a manner that its students will be better qualified to solve the numerous problems that must be faced in the management of the modern business enterprise.

News of the Sections

The New York Metropolitan Section of the Taylor Society began the year with a meeting attended by more than one hundred people at the Fraternity Clubs on October 15. Dr. Person reported on his European travels and as a result gave his ideas on international stabilization. Walter N. Polokov, who has recently returned from an extended stay in Russia where he was doing consultant engineering work for the Soviet Government, spoke out of his experience on the same subject. Lively and stimulating discussion followed the formal talks.

At a November 12 meeting Virgil Jordan, Economist with the McGraw-Hill Publishing Company, will continue the discussion with a talk on national planning. The meeting, which was originally planned for the nineteenth, was put forward in order that we might join with the N.A.C.A., S.I.E., A.M.A. and the Management Division of the A.S.M.E. in a joint meeting at the Hotel Edison on November 16 to hear John Carmody, Editor of *Factory and Industrial Management* and President of the S.I.E., on "What American Business Can Learn from Management Methods in Russia."

Reviews

The Problem of Unemployment. By Paul H. Douglas and Aaron Director, The Macmillan Company, New York, 1931, pages xix, 505.

It looks to me as if Messrs. Douglas and Director have finally supplied for the United States a fitting companion Bible on unemployment to Sir William Beveridge's "Unemployment, a Problem of Industry" in England. This new book cannot be too highly commended for the breadth and comprehensiveness of its treatment and the fairness of its outlook, even though some may feel that it is tainted with too pink a hue of liberalism.

The discussion includes a consideration of the extent of the cost of unemployment which is a splendid popular statement of the present situation.

The discussion of seasonal unemployment brings together in a convenient way the recent experience in the alleviation of seasonality.

The discussion of technological unemployment seems to me particularly fair and informing. The authors can find no trace as yet of an absolute increase in the percentage of unemployment due to this cause. But they recognize fully the temporary difficulties into which scores of individual workers fall due to the perils of trying to shift quickly from one job or one industry or one locality to another.

The discussion of cyclical unemployment states the various economic theories which have been advanced to account for depressions and gives a sane and balanced eclectic view of the causes.

Labor exchanges are informingly treated and the needs and possibilities here are wisely outlined.

The analysis of unemployment insurance strikes me as particularly needed in view of the great amount of misunderstanding, some of it due to malicious misinterpretation, of the role of unemployment insurance in a capitalistic economic regime. The summary account of the difficulties with the English Act should help to remove much confusion on this score. And the discussion of the requirements of a good law for application in this country is altogether constructive. The authors are in disagreement on certain points with the model bill proposed by the American Association for Labor Legislation, particularly the contributory feature. It may well be that since these laws will have to be enacted by the several states, we shall have an opportunity to experiment with both contributory and noncontributory legislation in order to determine which is the sounder and more practical measure.

I cannot too highly bespeak for this book the attention of every business executive who wants to think sanely and constructively about minimizing unemployment both in the immediate depression and the years to come.

ORDWAY TEAD[1]

Training for Group Experience. A Syllabus of Materials from a Laboratory Course for Group Leaders Given at Columbia University in 1927. Recorded by Alfred Dwight Sheffield, The Inquiry, New York, 1929, pages vi, 105.

Business and Ideals. A Syllabus of Discussion Outlines for Groups of Business Employes, The Inquiry, New York, 1929, pages 91.

The business world is under a greater debt to those students who call themselves The Inquiry, than it realizes. This organization has for several years been centering its study upon the meaning of small group activity, its technique, the way in which groups can help to clarify and create ideas as well as to spread their influence in action. Already a number of corporations have drawn extensively upon them for practical guidance on the conduct of committee work, group educational meetings and the like.

Professor Sheffield's book is a practical working manual of conference technique which will be found indispensable in that connection. It is a needed addition to the meager literature on group action; and every executive will find it useful in saving dollars and hours in all matters concerning meetings of boards of directors, stockholders, executive groups, foremen's councils and employe-representation plans. The idea that there *is* a right method for planning and conducting meetings is in itself so new that a book like this coupled with H. S. Elliott's "The Process of Group Thinking," will be a new asset in management equipment.

The other volume is more superficially a syllabus for use in supplying subjects, topics and questions for employe groups who wish to meet together for educational discussion of problems of the relations of the individual to industry. Both in the matter here offered and in the suggestion it gives for developing conferences on added topics, it will be found practical and useful in stimulating directed discussion.

ORDWAY TEAD[1]

Onward Industry! By James D. Mooney and Alan C. Reiley, Harper & Brothers, New York, 1931, pages xx, 564.

When Victor Hugo wanted to recount the rescue of one of his characters by being carried through a sewer, he used four chapters of "Les Miserables" in describing the sewers of Paris, their history and topography, and in expanding his own theories about sewerage, sanitation and agricultural economics. An impression of a somewhat similar elaboration of background is gained by the reader of "Onward Industry." Messrs. Mooney and Reiley have set for themselves the task of discovering and classifying the principles of business organization. Their search for historical analogies leads them by devious routes through the republics and empires of antiquity, the feudal system, Catholic and Protestant church organization, and military tactics as far apart as Cannae and Saint-Mihiel. Likewise the forms of industrial organization are traced from the dawn of human history through the Middle Ages and the Industrial Revolution all the way down to mass production and the Five Year Plan.

In thus historically buttressing their thesis, the authors have gathered an impressive mass of information, which testifies to painstaking and scholarly research. This factual material is presented skillfully and interestingly. The style is distinguished and sophisticated, even though at times just a shade too academic, and the arguments and conclusions are logically arranged. All in all the book makes a worthwhile contribution to the literature of management.

The authors conceive business organization as co-ordination made effective by authority, or "the supreme co-ordinating power." This authority is delegated and decentralized by the "scalar" process through the line organization, and receives functional guidance from the staff.

"The line plans, the line executes, the line does everything. In the line alone rests the authority to determine plans, the authority to execute such plans, and the responsibility for what is done. The staff is purely an auxiliary service; its function is simply to be informative and advisory with respect both to plans and their execution."

As to the staff itself, the authors believe that it should have its own scalar and vertical organization but should maintain horizontal contacts with the line at the various levels.

"Industry has already developed its own staff services. The next step is to organize these individual or departmental services into a co-ordinated staff service. Such a service must be at once horizontal in its relation to the corresponding line authority, and scalar in its relation to all similar staff service in the lower units."

---

[1] Editor of economic and business books, Harper & Brothers, and lecturer on personnel subjects, Columbia University.

Differing sharply from Dean Donham ("Business Adrift," by Wallace B. Donham, McGraw-Hill Book Company, 1931), Messrs. Mooney and Reiley believe that much of the future prosperity of American business lies in the enlargement of foreign trade.

"Already the consumer demand of America is having its reverberations in other countries. Today we see and note it in Europe; in another generation it will extend to the masses of Asia and Africa. It is the manifest destiny of all the world, with its billion and a half of human beings, to share in the material benefits conferred by the new industrial age. . . . In order to achieve this result . . . America must buy if she would sell, and because of her present creditor status she must buy a little more than she sells. This means that she must buy manufactured goods from abroad."

Mr. Mooney is export vice-president of the General Motors Corporation. Mr. Reiley was formerly advertising manager of the Remington Typewriter Company. Their business experience gives added authority to the principles advanced in their book.

EDWARD S. COWDRICK[7]

Social Politics and Modern Democracies. By Charles W. Pipkin, The Macmillan Company, New York, 1931, Vol. I, pages xxxiv, 377; Vol. II, pages vii, 417.

A detailed historical treatment of the social politics and legislation of France and England from 1900 to 1930 should be particularly welcome at this time when international events have thrown these two countries into juxtaposition.

Professor Pipkin's two volume work deals first with the background of the social conflict in England, and there follows a careful statement of the whole range of social legislation affecting conditions of work, housing and town planning, pensions and wage standards. The volume on England concludes with trade unions and their industrial and political alliances.

The volume on France deals likewise with the background as well as with specific forms of social legislation and the balance is made up of a study of the historical, political and theoretical aspects of the French labor movement.

If one is to accept the implications of Professor Pipkin's quotations that England's approach to the social consequences of her industrial problems has been "essentially" moral and "political" while that of France has been "intellectual" and "economic" one has more than a clue to post-war affairs in which England's insistence on maintaining the pound at par has cost her so dearly in trade and financial leadership.

The books are packed with quotations and references of official sources and in so far as these contain the meat and meaning of the social struggle it is authentic. But this very form of authenticity makes heavy going for the general reader, however valuable it may be for the student. There is, however, much that is important for an American public only now awakening to the need for a national policy in its social legislation.

JOHN J. HADER[8]

Reds and Lost Wages. By Charles G. Wood, Harper & Brothers, New York, 1930, pages xv, 280.

This book sets forth the ideas of a federal Commissioner of Conciliation and former member of the Massachusetts Board of Conciliation and Arbitration on the nature and causes of labor controversies and how to cure them. It is a diffuse, chatty and journalistic distillation of the author's labor philosophy and his varied experience as an official conciliator. The point of view, but not the scope, of the book is indicated by its title. He believes that "Red leadership" means "busted unions." But he does not confine attention to communist strikes and left-wing unions. He deals much more generally with policy and strategy in industrial relations. His thesis would be more broadly formulated in the slogan, "Strikes mean lost wages." Most strikes, including all communist strikes, are disruptive and damaging to employers, employes and the community. All communist strikes are total losses. The cause of strikes is to be found, in the last analysis, in the conditions of employment and the level of wages. Rectify conditions, treat labor fairly and you avoid strikes and scotch the "Red menace." This, Wood implies, is the basic cure. Naturally he believes strongly in the efficacy of conciliation and arbitration.

The appraisal of the book, and even a clear understanding of the author's ideas, are made difficult by a loose and rambling style, the complete absence of documentation and a pervasive and complacent anonymity, only partly necessitated by the author's official and confidential relation to the events described. There are many colorful controversy incidents, often elaborated with verbatim reproductions of conversation. Mostly, these are meant to point the moral of the author's theses that strikes are largely uncalled for, labor leaders (especially those in "illegitimate" unions) often dunderheads, and the "Reds" the enemies of mankind. Some of his interpretations of, and comments upon, the incidents described are shrewd enough: e.g., his wise insistence that radicalism, strikes, agitation, etc., are the result of bad conditions and his remark that "as long as" the employes believe "a good thing is wrong, it is." But more numerous are the statements which smack of dogmatic sentimentalism and raise doubts of the author's accuracy and impartiality. There is room for only a few examples: "Fundamentally, the communist movement in the U. S. is illegal" (p. 14); "In New York the courts have fixed a limitation on the number of pickets" (p. 22); "A fair wage is the one fixed by an employer and his employes by agreement—or one awarded by a board of arbitration" (p. 237); "The question 'what is a fair wage' is always arbitrable" (p. 234);

---

[7] Industrial Engineer, New York, N. Y.

[8] Rockaway, N. J.

"Arbitration in labor disputes is never untimely" (p. 237). Further, one gathers that if the "Reds" don't like it here they should go back to Russia, that those who believe the Sacco-Vanzetti case was a miscarriage of justice are probably "Reds" or at least "Pinks" and that the police and other officials seldom or never initiate violence in labor controversies.

P. F. Brissenden[4]

Union Management Co-operation on the Railroads. By Louis Aubrey Wood, Yale University Press, New Haven, 1931, pages xii, 320.

If one can ever believe a jacket, this painstaking survey is intended "for employing companies and employes who may desire to establish their industrial relations on a more effective . . . foundation." The treatment is probably a bit too scholarly for exactly those audiences and is rather to be recommended to students of co-operation, graduate school grade. Mr. Wood covers scrupulously what the title indicates and overflows that limit only for eleven pages where he sketches cases of co-operation in other industries where employes are organized.

Most of the book, of course, tells of the co-operation in the mechanical departments of the Baltimore & Ohio Railroad, Canadian National Railway Company, Chicago & Northwestern Railway Company, and the Chicago, Milwaukee, St. Paul & Pacific Railroad Company. The first of these railroads has extended co-operation to two other branches; transportation and maintenance of way. The second has spread it to the department of maintenance of way and structures. A later chapter tells of the Mitten Plan and that of the London, Midland & Scottish Railway. A few pages are devoted to the narrative of the inception of American co-operation in railroading—the work largely of William H. Johnson, Otto H. Beyer, Walker D. Hines and Daniel Willard.

Mr. Wood is obviously convinced that this co-operative work is paying in material returns as ~~well~~ as social, but he avoids the error of attempting to prove it statistically. He muses quite at length on the science of measurement of such intangibles. And he has also severely limited testimonials. Probably the writer was faced with a difficulty due to the fear of the employer that his statement of approval might be promptly used as a lever for some concession. This difficulty of evaluation should exist only in the transition from bargaining to factual approach, from a partial to a complete comprehension of the nature of co-operation and of the aims of the *other* co-operating party.

Of particular interest is the joint effort to stabilize employment. Here is a series of instances where, without any dominating leadership such as that of Col. Proctor and Mr. Dennison, the several huge railroads have proceeded to do enormously valuable work on stabilization.

Is not this the lesson: that co-operation begets an effective incentive to stabilize? Most employers believe that the advantages of stabilization are all for the workmen. It was not so long ago that they believed that a large pool of unemployed was a good thing for them. But in the cases cited we find that the steady insistence of employes working through recognized channels has caused the management personnel to realize that here and there they can have an effect upon the problem; can get better co-ordination between purchasing, manufacturing and cost keeping; can relate plant with plant in order to give their employes steadier work.

It seems to come only as a mild surprise that all this good-natured yielding to the importunities of the union membership has netted them a better use of their equipment, a better turnover of raw material, purchasing at lower prices, more effective use of the supervisory staff, smaller loss on labor and material through training green help, and less dissipation of skill and moral fiber.

The book is clearly expressed and puts the reader pleasantly in touch with the necessary vocabulary and many interesting practices of the repair and maintenance of way divisions.

Francis Goodell[5]

Psychology in Modern Business. By Harry Walker Hepner, Prentice-Hall, Inc., New York, 1930, pages xv, 728.

The trend of thought which led to this book had its inception in the observation of Professor Hepner that less than one per cent of the college students who enroll for a course in elementary psychology ever continue the study of psychology as their life work. Nearly all of them enter business or some other occupation where psychology is a means to an end rather than an end in itself.

For these, and for business men who have tried with scant success to dig helpful facts from theoretical text books, Professor Hepner has written his book. In it he presents in popular fashion several of the more important experiments in applied psychology. Because these do not cover the whole field, he records entertainingly a great many observations and generalizations about human behavior in business which have not yet been experimentally verified.

To those interested in scientific management, Professor Hepner's chief service has been to describe in workable detail some of the simpler psychological research "tools." For instance, there is the technique of ascertaining the probability that a numerical difference between averages indicates a real difference. This is something which should be familiar not only to management engineers but to executives who are trying to decide whether the apparent improvement due to a changing policy is real or only a chance variation.

There is much good factual material in the book. It is to be hoped that the sugar-coating process with which

---

[4] Assistant Professor of Economics, Columbia University, New York, N. Y.

[5] Industrial Engineer, Naumkeag Steam Cotton Company, Salem, Mass.

Professor Hepner has sought to bait his sophomores will not lead his more mature readers to discount the underlying data.

L. R. Frazier[6]

Budgetary Control in Manufacturing Industry. By the National Industrial Conference Board, Inc., New York, 1931, pages xiii, 180.

This book is in the nature of a report of a survey made by the Board in the summer of 1930 to determine "(1) the extent to which the manufacturing industry of the United States had adopted methods of budgetary control, (2) the methods adopted, and (3) the results obtained." Data were collected from 294 companies representing 76 industrial groups. The companies selected all had a value of production for 1927 in excess of $100,000,000 and an AAAA credit rating. These data were supplemented by, and evaluated in the light of a careful study of existing literature on the subject as evidenced by frequent accredited quotations from well known authors in the field. The quotations, however, are short and well chosen so that the impression of too much quoting is not created.

The style used is simple and direct. Explanations are brief and the authors pass quickly from point to point so that the book is well written for the use of the busy business executive.

The book traces the budgetary control movement from its beginning in municipalities, through state and national governments and finally into industry. The application of budgetary control to industry is discussed in relation to benefits to be obtained, scope of budgets in industry as a whole, and the difficulties to be overcome.

A chapter is devoted to the preparation of a business for budgetary control. This shows the place in the program of forecasting trends, market analysis, good accounting practice, standards and standardization and proper organization. Another short chapter deals with the procedures followed in establishing the underlying estimates.

The detailed structure of manufacturing budgets is then presented under the following headings: (1) sales budgets, (2) production budgets, (3) expense budgets, (4) capital outlay and cash budgets, (5) budget summaries, or estimated profit and loss statements and balance sheets.

A chapter which outlines methods found, extent of use, and results obtained is devoted to each major group. This is followed by five appendices on special topics related to the survey.

This book has the advantages and limitations of any book based principally on a survey. It has a breadth of viewpoint which might be expected from a study of a large amount of the experiences of others, and for that reason lacks somewhat of the depth and enthusiasm of a treatise written by an author from his own experience in the work. The description of detailed methods is apt to be brief and cursory. This is especially true of the discussion of the use of graphical charts. The examples are taken from few sources and but a few types of such representation are mentioned.

The study, however, accomplishes its purpose in an admirable way. It gives a thorough factual analysis of the present practices in budgetary control as used by some of our leading industries, points out the advantages to be gained, warns against the pitfalls of poor practices and gives encouragement to further development. Little of this information is new since there has been so much literature written based on individual cases. The summary of a large number of such cases is well worthwhile, however, and this book should be a valuable aid to the business executive who wishes to check his progress against the position of industry in general in the matter of budgetary control, or to get a summary of the experiences of others before starting on a budgetary program of his own.

Floyd F. Hovey[7]

Marketing Principles. By John Freeman Pyle, McGraw-Hill Book Company, New York, 1931, pages xiii, 565.

The author has presented in this book a most comprehensive analysis of the marketing function. To those business men who are face to face with a specific marketing situation in their daily work, the description of this activity as it is carried on in other fields should be very interesting and instructive.

The scope of this book is very broad and this has of course made it impractical for the author to deal with all the possible problems and types of marketing in full detail, but there are few if any important phases of the subject that are not at least mentioned.

Considering the controversial nature of many of the subjects, such as installment selling, chain stores and cooperative marketing associations, the author has been very successful in keeping free from injecting his own views into the subject matter. It is very evident that it has been the desire to set forth the *facts* regarding past and current practices, and to leave conclusions to be drawn by the reader. The only time the author has permitted himself to depart from this disinterested and historical method of treatment is in the closing chapters, where he sets forth the need for a more scientific approach to the analysis of marketing problems.

The arrangement of the material is logical and the typography is good. It seems to the writer, however, that the use of more illustrations in graphic form would have materially assisted the reader in absorbing the main points developed. A very valuable contribution of the author is the reference that is made to a large number of bibliographical sources on the various subjects.

To those critics who find it easy to orate upon the "high cost of distribution," this book is particularly recommended. No one can read it without reaching the conclusion that most of the functions now performed will always have to be performed in one way or another. To

---

[6] Personnel Department, The Kroger Grocery & Baking Co., Cincinnati, Ohio.

[7] Industrial Economy Department, Eastman Kodak Company, Rochester, N. Y.